

**SOUTHEASTERN ALASKA
Oceanographic Conditions
and
NOAA's Twenty-One Year Oil Spill Response History (UPDATED)
(1979-2000)**

**John Whitney
NOAA Scientific Support Coordinator for Alaska**

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**Hazardous Materials Response and Assessment Division
Office of Response and Restoration
National Ocean Services
Anchorage, Alaska**

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Introduction

Southeast Alaska is a land unto its own, largely unlike the remainder of Alaska. Being dotted with thousands of islands, lots of fiords with glaciers at their heads, and with high precipitation, this region has a very strong maritime character. Towns are nestled on the narrow strips of land between the mountains and the sea. Movement throughout the region is facilitated by numerous ferries and float planes. A second car to a resident of SE Alaska is most likely a boat. A summer evening's walk or bike ride elsewhere is a short boat ride to a favorite fishing spot in SE Alaska. Marine traffic from fishing boats, barges, and pleasure craft to small tankers, freighters and large cruise ships always poise the threat of marine petroleum pollution to this biologically rich and diverse maritime region.

No overall model for the net surface circulation for southeast Alaska has been developed, although aspects of it have been studied and summarized by various investigators (McLain, 1969; Martin, 1969; Burbank and Flagg, 1979; Sundberg, 1981; Washburne, 1989). The Pacific Subarctic gyre and its associated northward flowing Alaska Current (Figure 1; Muench and Schumacher, 1980) appear to influence the circulation by producing a predominantly northward surface circulation through the inland passages of Southeast Alaska. Figure 2 summarizes the results of a drift card study, conducted by Martin (1969) during the spring and summer when fresh water runoff is high. Drastically reduced freshwater runoff in the winter probably produces surface-water intrusion in some estuaries and fiords which, during the summer, probably show a net surface outflow. There is evidence of both northward and southward surface water circulation in southern Chatham Strait between Christian Sound and Frederick Sound, dependent on local changes in runoff and winds. In the northern half of Chatham Strait surface circulation is generally north, followed by westward flow through Icy Strait. Within Lynn Canal surface circulation tends to be northward on the eastern side and southward on the western side with Lynn Canal discharging into Icy Strait.

Figure 3 summarizes circulation studies in Sitka Sound (Sundberg, 1981). Coastal waters of the northward flowing Alaska Current enter Sitka Sound from the south and exit around Cape Edgecumbe producing a weak CCW gyre in Sitka Sound. Immediately seaward of Sitka investigators have discovered a clockwise eddy in the Alaskan Current (Figures 1 & 4; Tabata 1982) roughly 100 km in diameter that tends to persist up to one half year. At any given time, though, its size, magnitude, and even its existence may vary.

Wind data for SE Alaska show a dominance of south and southeasterly winds, generated by a dominant low pressure region off the Prince of

Wales Island/Queen Charlotte Islands region. These winds tend to reinforce the net northward water surface circulation. These conditions produce the characteristic rainy climate, typically with winds of 5-35 kts (Burbank and Flagg, 1979). Mountains and fiords throughout this region tend to create localized channeled winds that may be at large angles to the regional climatic winds. Large glaciers at the heads of many of the fiords tend to produce drainage winds.

Most common during winter, strong northerly and easterly Taku winds occur when the Yukon High extends into Southeastern Alaska, causing katabatic winds to cascade through the Coast Range passes from the interior of the continent. Wind speeds are typically 30-70 kts, gusting to 100 kts. Taku wind conditions persist for periods of 3 days to 3 weeks and can induce a massive flushing of surface waters throughout southeastern Alaska. Rapid surface transport out Icy and Chatham Straits occurs during such flushing (Burbank and Flagg, 1979).

There is a semi-diurnal tidal flushing throughout Southeast Alaska. Typical tidal heights on the outer, western coasts have a range from 8 to 15 feet (Figure 5) while in the inner regions of SE Alaska the tidal range is from 10 to 25 feet (Figure 6). At typical spring high tide conditions the level of the tide on the outer coasts is around twelve feet (Figures 7 & 8), with these high tide levels being achieved all within 15 minutes between the southern and northern ends of SE Alaska (Figure 9). As the incoming tide rushes through the passages, channels and fiords, the inner coastlines will experience spring high tide levels of around 18 to 19 feet (Figures 7 & 10). This tidal advance occurs reasonably simultaneously throughout all the Southeast Alaska (Figure 11).

Tidal currents vary considerably through the area. Washburne (1989) has captured this graphically as displayed in Figures 12-17 which show the speed and directions of typical maximum flood and ebb tidal currents throughout Southeastern Alaska.

Oil Weathering Characteristics of Diesel

Since diesel is by far the most common fuel utilized and spilled in this area, Appendix 3 is devoted to ADIOS plots of some of the weathering characteristics of diesel. ADIOS (Automated Data Inquiry for Oil Spills) is the NOAA software program which calculates weathering characteristics as a function of time, temperature, and wind speed for a variety of natural and refined petroleum products. Since diesel does not emulsify, these graphs plot only the approximate evaporation and natural dispersion characteristics of diesel. To bound the behavior of diesel, temperatures of 33° and 50°F are used along with winds from 2 to 30 knots (Figures 18 & 19), roughly bounding the conditions around southeastern Alaska. These plots show that for winds of 15 knots and above nearly all the diesel is either evaporated or naturally dispersed in the water column within one day. To put these characteristics of diesel into perspective and because SE Alaska is subject to possible spills of North Slope crude (NSC) oils, Figures 20-23 compare the weathering of a diesel to that of this crude oil at a 15 knot wind speed and temperatures of 33° and 50°F. Basically, these plots illustrate that the evaporation of NSC is slower than that of diesel, but ultimately achieves the same approximate percentage. However, a dramatic difference is seen in the

natural dispersion tendencies of this crude oil with NSC exhibiting virtually no natural dispersion under these wind and temperature conditions--a clear indication of the difference between persistent and non-persistent fuels.

NOAA Spill Responses

In Southeastern Alaska, the U.S. Coast Guard has requested scientific assistance from NOAA Hazmat forty-nine times in the past twenty-one years (Appendix 4, Figure 24). Of these, 36 incidents have involved actual releases of petroleum into the marine environment (Table 1), and 13 have been potential release incidents (Table 2). All these 49 incidents are spread throughout SE Alaska, with concentrations perhaps showing up around Prince of Wales Island, Wrangell Narrows, and the Ketchikan vicinity.

The two largest releases occurred within ten months in 1987 as the T/V Stuyvesant carrying North Slope crude from PWS encountered stormy weather in the Gulf of Alaska (GOA) causing cracks to develop in the hull. On each occasion approximately 15,000 bbls of North Slope crude were lost in an area between roughly offshore Sitka to offshore Oregon. In the first instance, overflights along the entire track of the tanker revealed no oil slicks, and it is believed that much of the oil evaporated and dispersed in the fierce weather and sea conditions. On the second occasion, the Coast Guard overflights identified oil slicks off the Washington/Oregon coast and off Dixon Entrance, however; it was deemed imprudent to mount any type of response. Needless to say, the T/V Stuyvesant has been removed from the TAPS trade. Neither of these spills posed a direct threat to SE Alaska as they were a considerable distance offshore. Nevertheless, in the early 90's the threat of a crippled tanker seeking shelter in SE Alaska, or unusual winds beaching a large slick of highly persistent, emulsified North Slope crude was taken very seriously, and the oil industry and SEAPRO maintained stocks of response gear in Sitka and Ketchikan. As a result, the Coast Guard mandated that TAPS trade tankers remain greater than 200 miles offshore of SE Alaska as they transit the Gulf of Alaska, virtually eliminating the threat of oil spills from this source affecting SE Alaska. The oil industry no longer maintains a stockpile of dispersants in SE Alaska.

The third largest and most damaging oil release occurred in December of 1979 when fierce southerly winds and sea conditions caused the Taiwanese ore freighter, M/V Lee Wang Zin, to capsize with 53,310 long tons of taconite pellets, 7080 bbls of bunker fuel, and 500 bbls of diesel oil aboard in Dixon Entrance. After capsizing, the vessel was blown aground on the southeastern end of Prince of Wales Island at Kendrick Bay. Large oil sheens and slicks were reported moving northward in gale winds and high seas up Clarence Strait with a large accumulation beaching at Caamano Pt., 40 nautical miles north of Kendrick Bay. Over 350 miles of shoreline were contaminated within a week of the accident, and oil slicks identified as products of the spill were sited a month later, 210 miles north of the vessel's grounding site. No open water recovery was possible, and clean up was relegated to shoreline measures, mostly manual pickup and burning of oiled logs and debris. Cleanup continued through the spring and into the summer. At Kendrick Bay and Caamano Point 24,580 gallons (less than 10% of the fuel released) of oil were

removed at a cost of \$2,238,000 (\$85 per gallon) and 2,660 cords of oil-soaked wood was burned. Resource impacts occurred to waterfowl and small fur bearers.

As illustrated by Figure 25, these three incidents were all so large volume-wise that many of the other 33 incidents hardly register on the same oil spill volume graph. Removing these three incidents, however, results in Figure 26 in which the more frequent oil spill in SE Alaska plots anywhere from less than 100 bbls to around 1000 bbls. When the T/B Annahootz grounded in Wrangell Narrows in 1986 under 35 knot wind conditions, an estimated 2143 bbls of diesel was released. Roughly fifteen hours later the Coast Guard conducted an overflight and found no visible signs of the spill and no impacts were observed.

The maritime traffic around SE Alaska is fairly diverse, and the oil spill statistics reflect this pattern. Figure 27 reveals that spill sources are rather evenly divided among tankers, fishing boats, barges, work boats, cruise ships and onshore facilities. The most common fuel utilized and hence spilled is diesel. Diesel tends to naturally evaporate and disperse rather rapidly, such that most of the responses to these spills involve only monitoring the incident. Diesel spills in the often quiet waters near the heads of fiords in SE Alaska, however, have resulted in some responses by the Coast Guard and the RP, e.g., M/V Vashon and the T/V May. Over 75% of the spills in SE Alaska were of the non-persistent fuel type (Figure 28) which includes gasoline, jet fuel, diesel--all petroleum fuels that have been stripped of their asphaltene heavy ends and tend to evaporate and disperse rather rapidly and completely under natural conditions.

In the past (mid-ninties) southeastern Alaska experienced oil spill risks from two types of maritime traffic - cruise ships and log freighters - that are rather unique and involved Bunker C, a particularly persistent hydrocarbon fuel fraction. With the the greater awareness of air pollution from burning Bunker C, the two dozen cruise ships, which make hundreds of runs throughout SE Alaska each summer, have largely switched to cleaner gas and diesel turbines. Considering their limited presence (summer months only) their representation in the oil spill statistics is rather high (Figure 21) such that their move to lighter, non-persistent may seem to be a plus for the oil spill threat for SE Alaska. However, most of these diesel-powered cruise ships also have cheaper, heavier IFO fuel stocks which are switched to once the cruise vessels leave the vicinity of the towns and villages in SE Alaska. Persistent oil spilled from a cruise ship still remains a significant threat.

With the decline in the logging industry in SE Alaska in the past half dozen years, the number of large, foreign, Bunker C-fueled freighters has also decreased. This factor has definitely reduced the threat of damaging oil spills to the inside waters and numerous inlets and passages in SE Alaska; although, it still exists. To date only the M/V Lee Wang Zin has actually been involved in a major incident, although there have been a couple of scary potentials, e.g., M/V Honan Ace and M/V Hanei Sky.

In recent years an effort has been made, by both the Coast Guard and the state, to locate abandoned fish processor shore side facilities that were located all over SE Alaska and mostly active in the early part of the

20th century. Inevitably large wooden tanks containing Bunker C have been left behind. As these old wooden tanks age and decay, and fill with rain water, leaks develop causing oil to run into the marine environment. One such incident occurred in 1997 at the abandoned George Inlet Cannery, south of Ketchikan, when an old wooden storage tank fell off its platform onto the beach, ruptured and spilled about 100 gallons of Bunker C onto the rocky, cobble shoreline. On another occasion, in November of 2000, several hundred gallons of Bunker C were released from an old unknown storage tank hidden back in the heavy underbrush along a steep shoreline at a long abandoned herring reduction plant in New Port Walter cove on the SE side of Baranof Island. Even though these spills may seem small and annoying, in the latter instance there was a real threat of potential damage to ongoing experiments involving fish in net pens plus other ongoing research studies at the NMFS Little Port Walter Research Station. Undoubtedly more of these old facilities will be accidentally discovered in SE Alaska, as time and nature work their restorative powers.

The final section culminates this analysis of the twenty-one year history of oil spills in southeastern Alaska with the individual NOAA spill reports of each of the 36 actual and 13 potential petroleum releases that NOAA has responded to in this region.

If you have any comments or questions regarding any of the included material, please feel free to contact me. I reside at the Coast Guard MSO Anchorage office at 510 L Street and my phone is 907-271-3593. Aloha and adios.

References

Burbank, D.C. and L.B. Flagg, 1979, Fish, Wildlife, and Habitat Resources and the Potential Impacts of Oil Transportation--Southeastern Alaska, Alaska Dept. of Fish and Game, Anchorage, Alaska.

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Washburne, R., 1989, Southeast Alaska Current Atlas, Weatherly Press, Bellevue, WA, 206-881-5212.

Appendix 1
Circulation in Southeast Alaska (Figures 1-4)

Figure 1

NET SURFACE CURRENTS IN THE GULF OF ALASKA

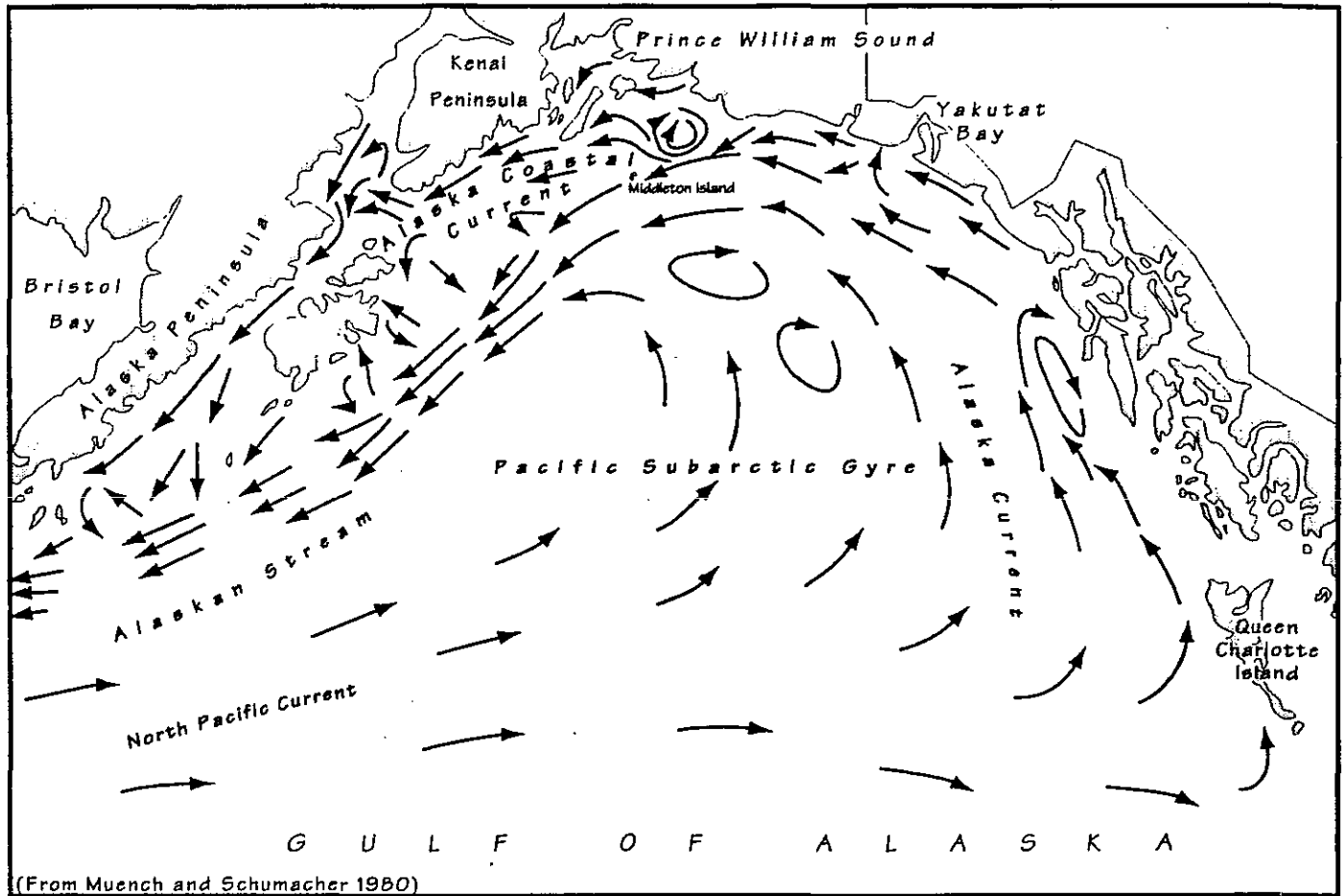


Figure 2

GENERALIZED SURFACE MOVEMENT

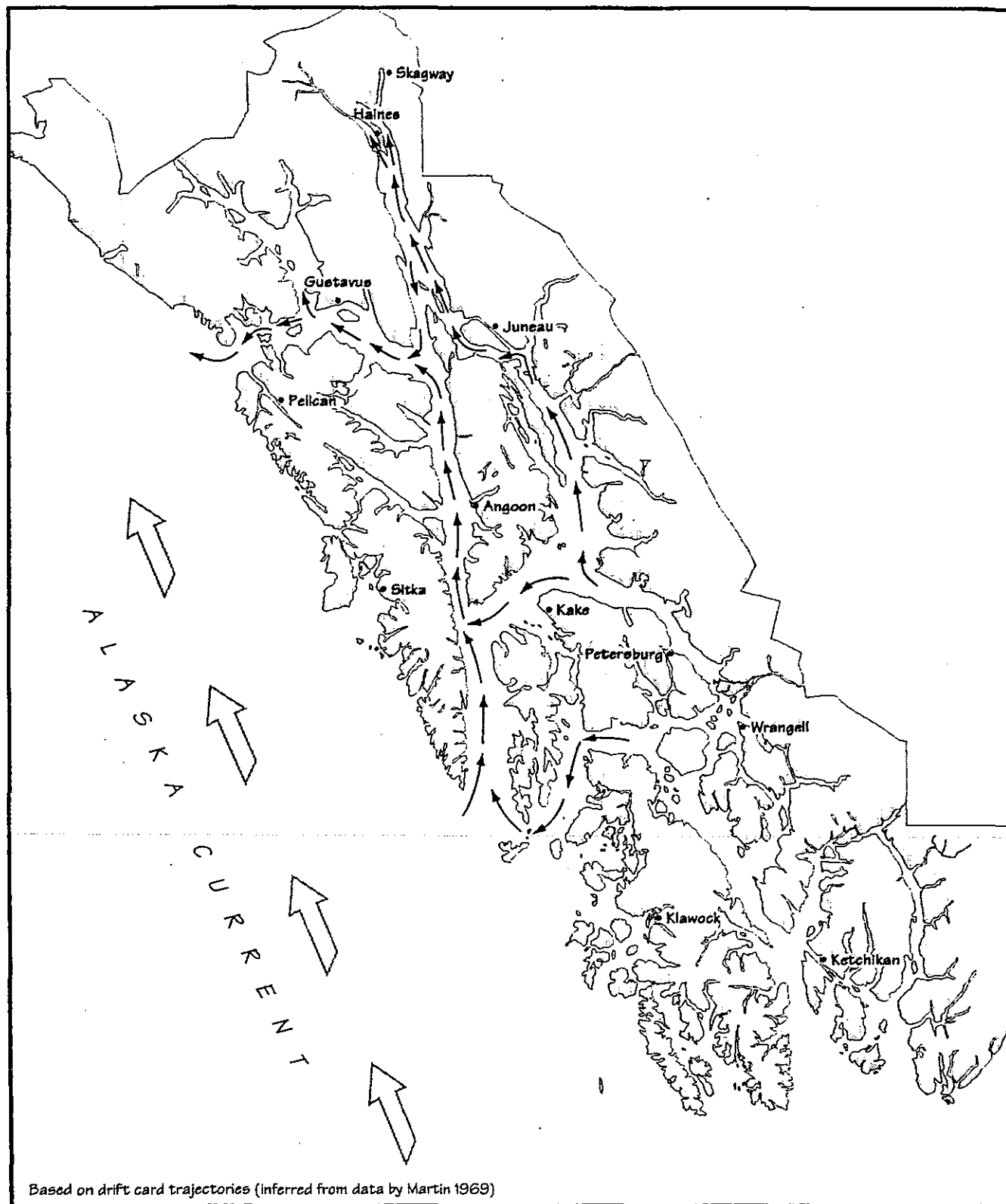
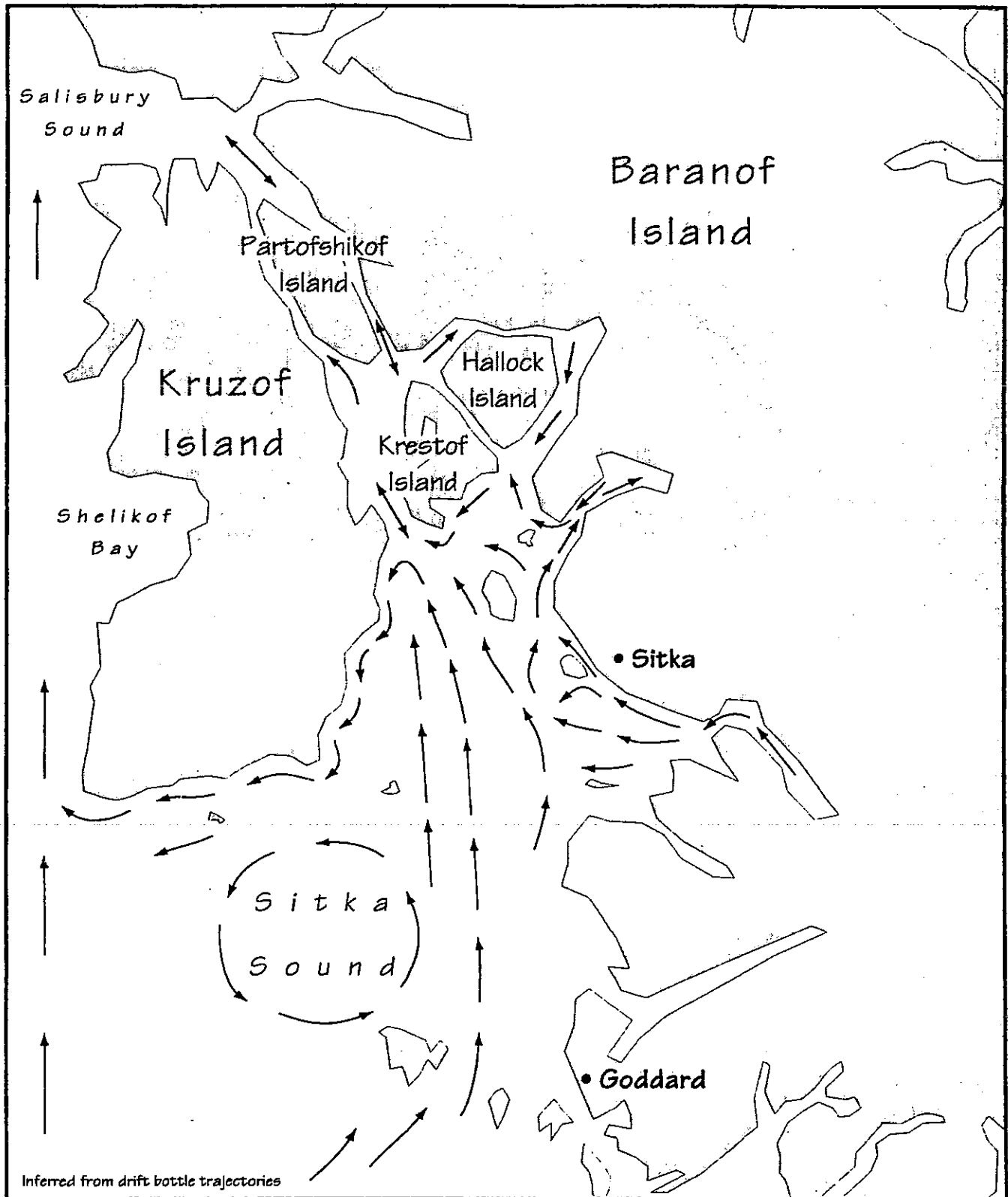


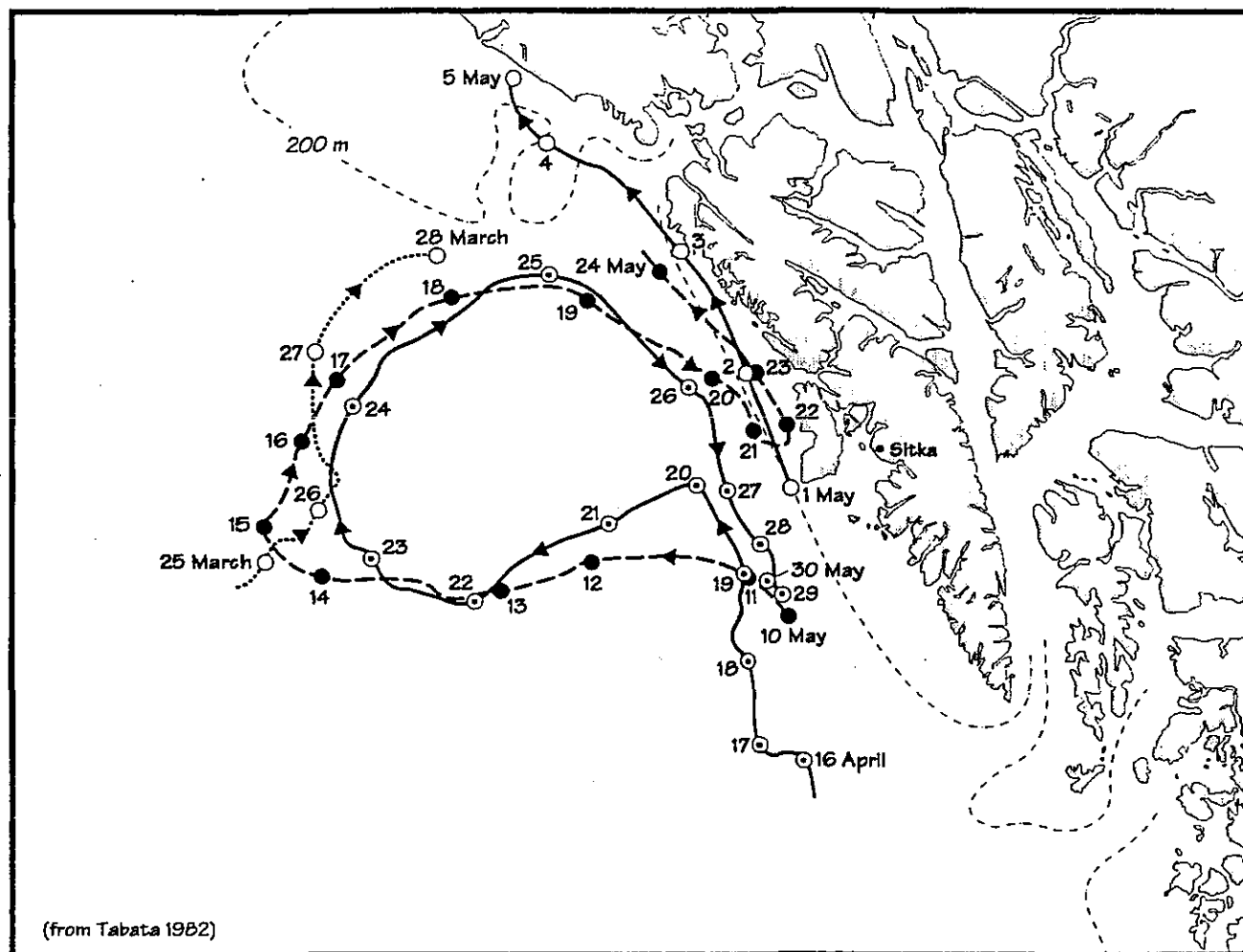
Figure 3

NET CIRCULATION IN SITKA SOUND



(From Sundberg 1981)

Figure 4 TRAJECTORIES OF NORPAX SATELLITE-TRACKED DRIFTING BUOYS
Vicinity of Sitka Eddy, 1977



Appendix 2

Tidal Heights and Tidal Currents in Southeast Alaska (Figures 5-17)

Table Bay, Kuiu Island

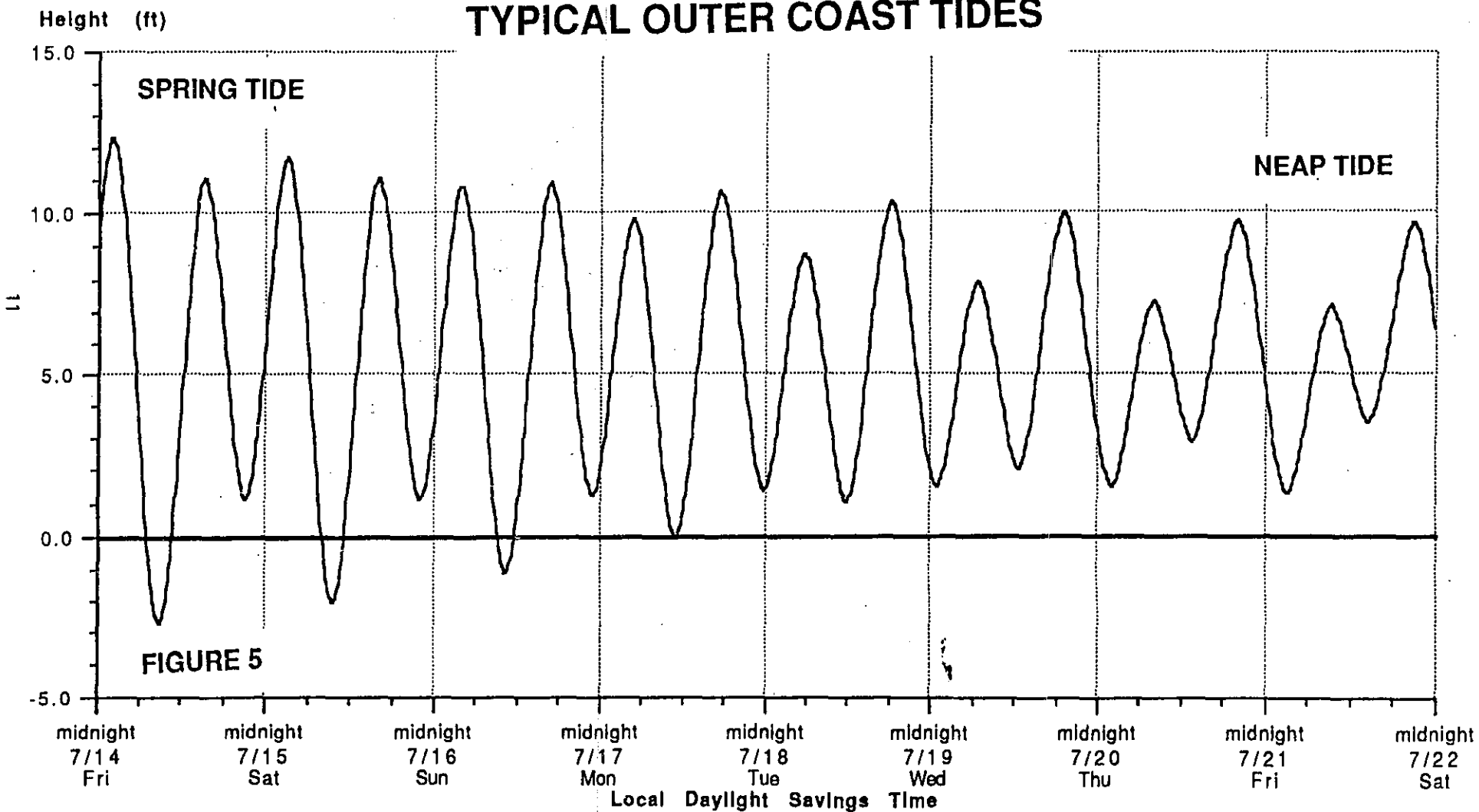
Shio Version 1.1

潮

Tidal heights at Table Bay, Kuiu Island, Chatham Strait
Station No. 1719 Latitude: 56°10.00' Longitude: 134°15.00'
Based on Sitka

From Fri 07/14/1995 to Fri 07/21/1995 Local Daylight Savings Time

Heights TYPICAL OUTER COAST TIDES



Cosmos Point

Shio Version 1.1



Tidal heights at Cosmos Point, Frederick Sound

Station No. 1655

Latitude: 56°40.00'

Longitude: 132°37.00'

Based on Juneau

From Fri 07/14/1995 to Fri 07/21/1995

Local Daylight Savings Time

Heights

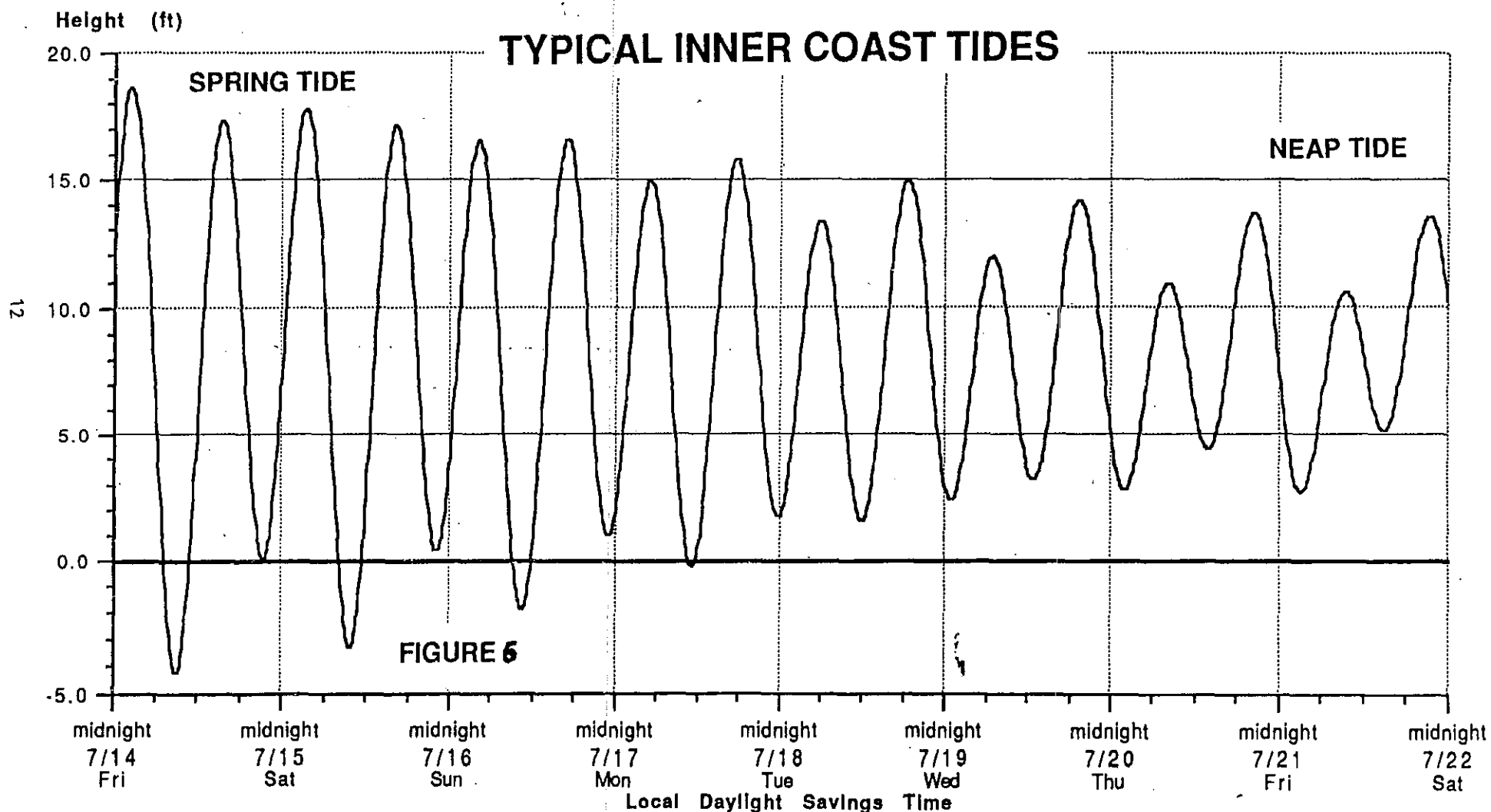


Figure 7

TIDE STATION LOCATIONS

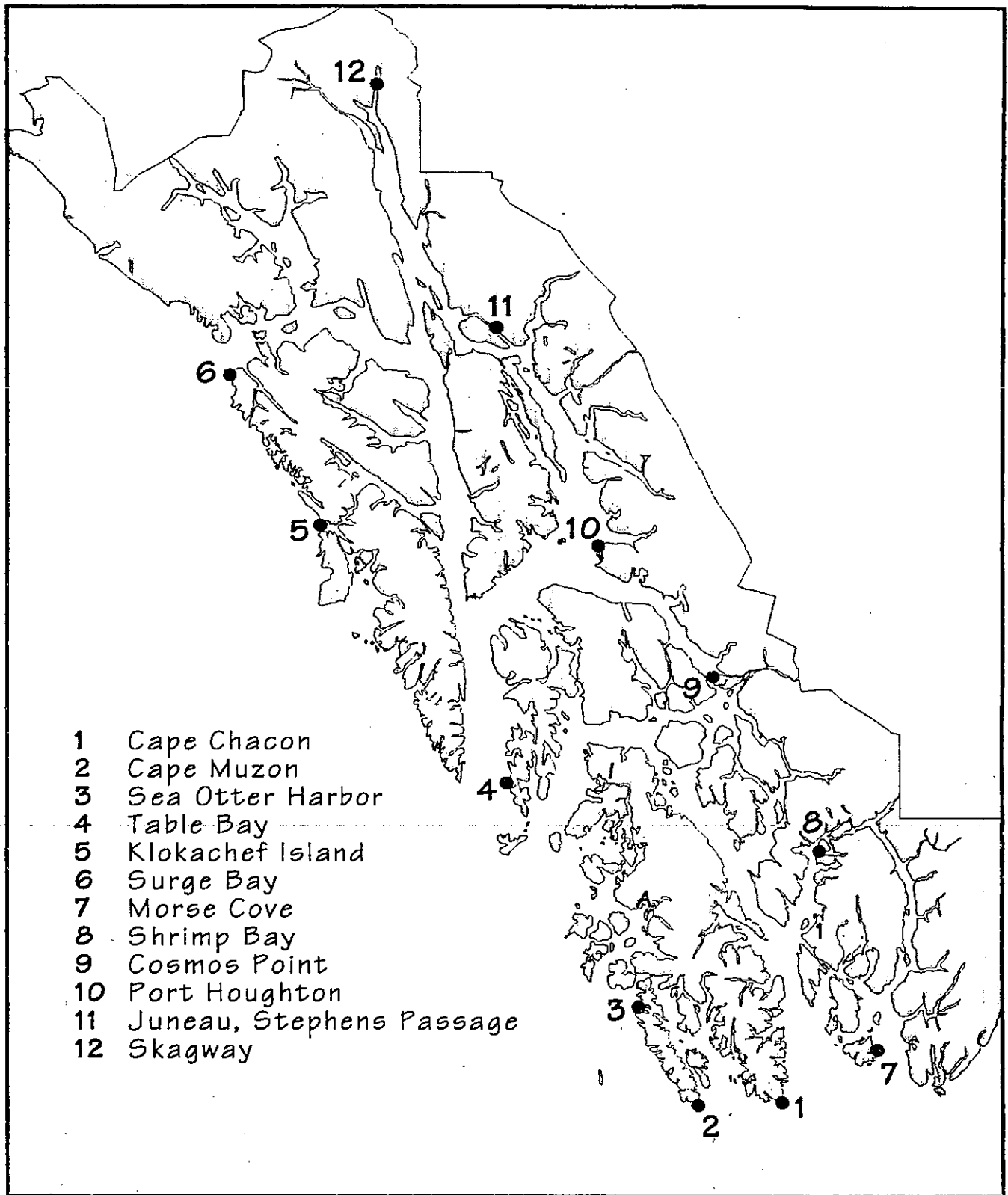


Figure 8. Typical spring high-tide levels for Outer Southeast Alaska coastal sites.*
(southeast to northwest)

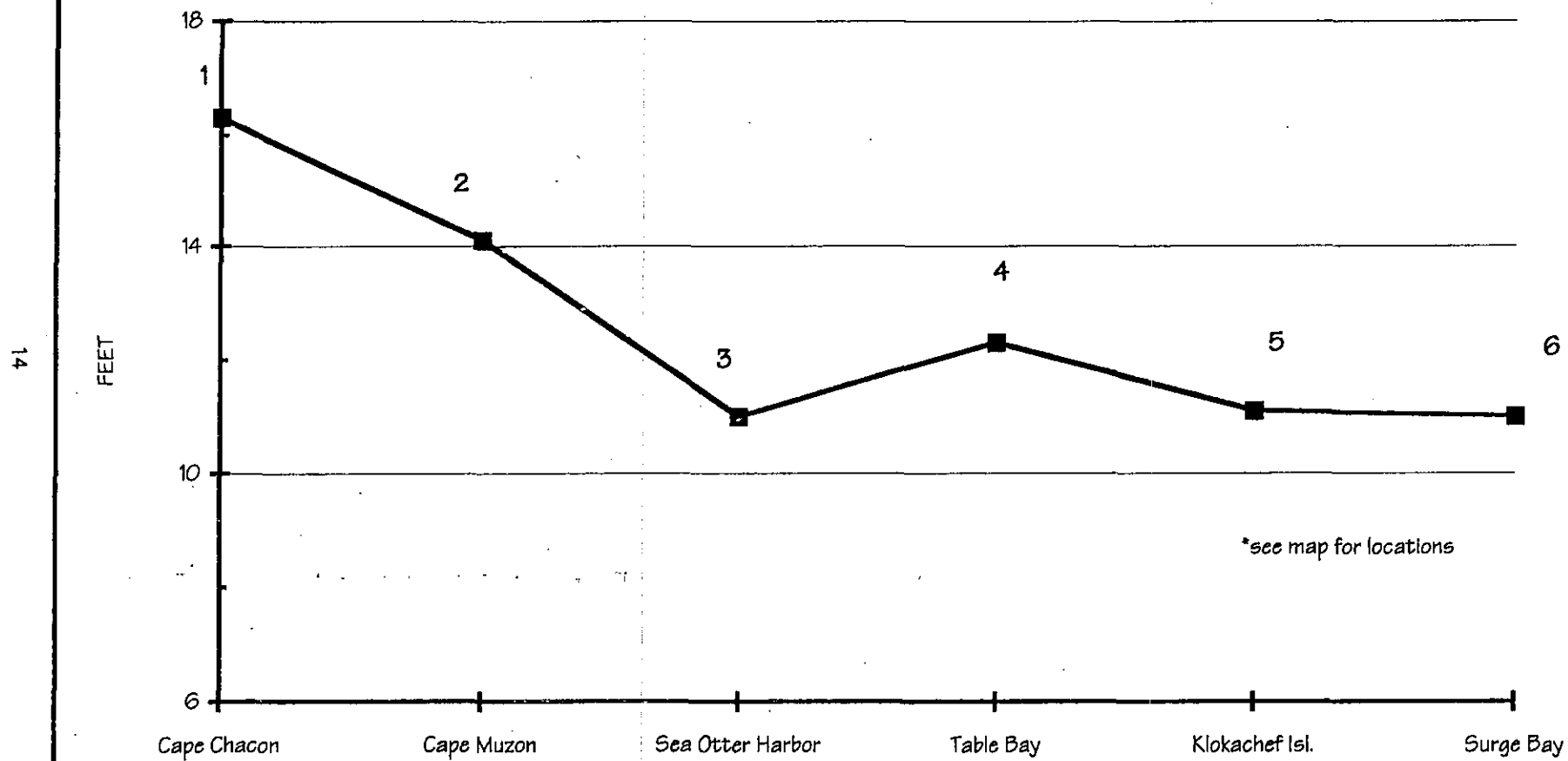


Figure 9. Average relative times for Outer Southeast Alaska tides.
(southeast to northwest)

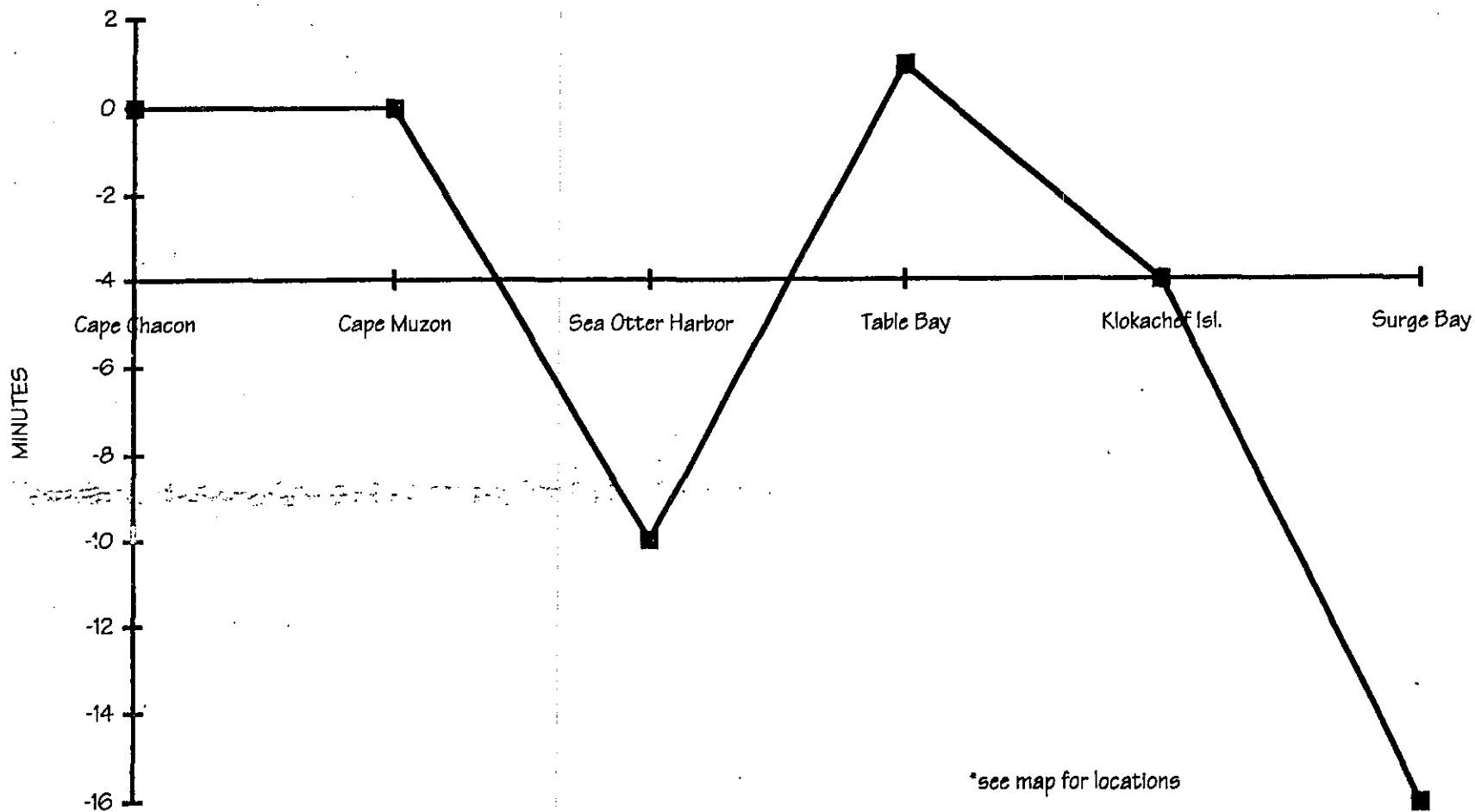


Figure 10. Typical spring high-tide levels for Inner Southeast Alaska coastal sites.*

(southeast to northwest)

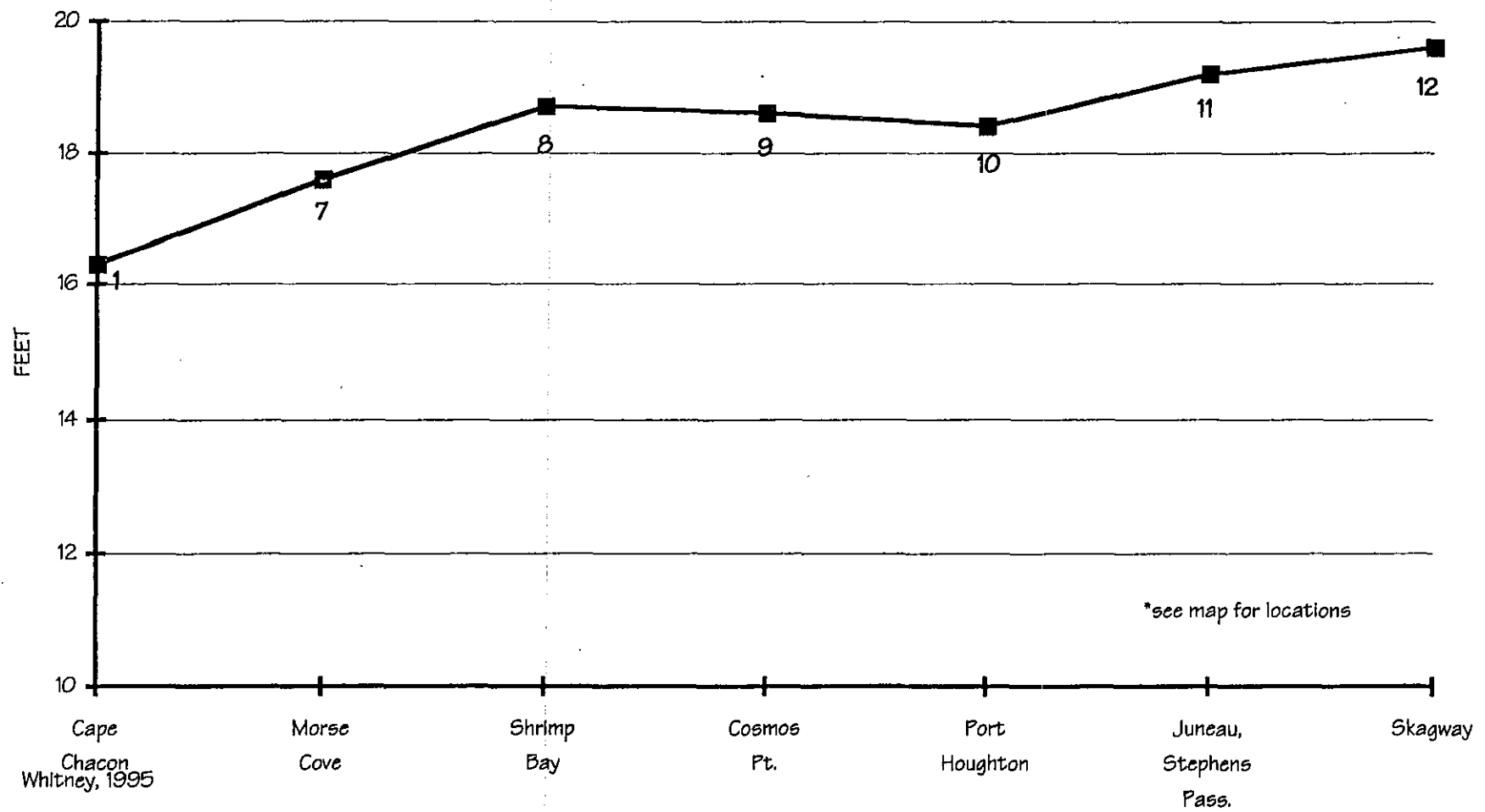


Figure 11. Average relative times for Inner Southeast Alaska tides.*
(southeast to northwest)

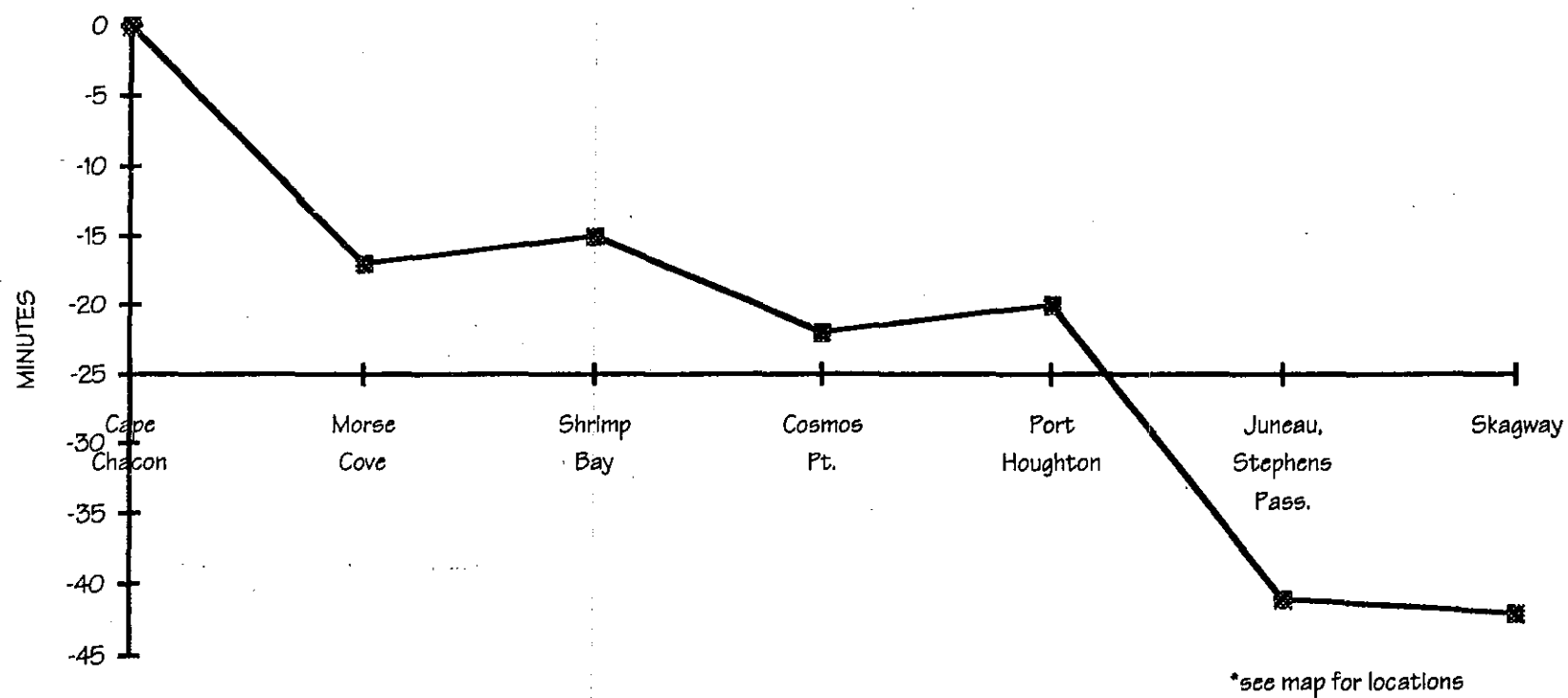


Figure 12

TYPICAL MAXIMUM FLOOD TIDE CURRENTS / North

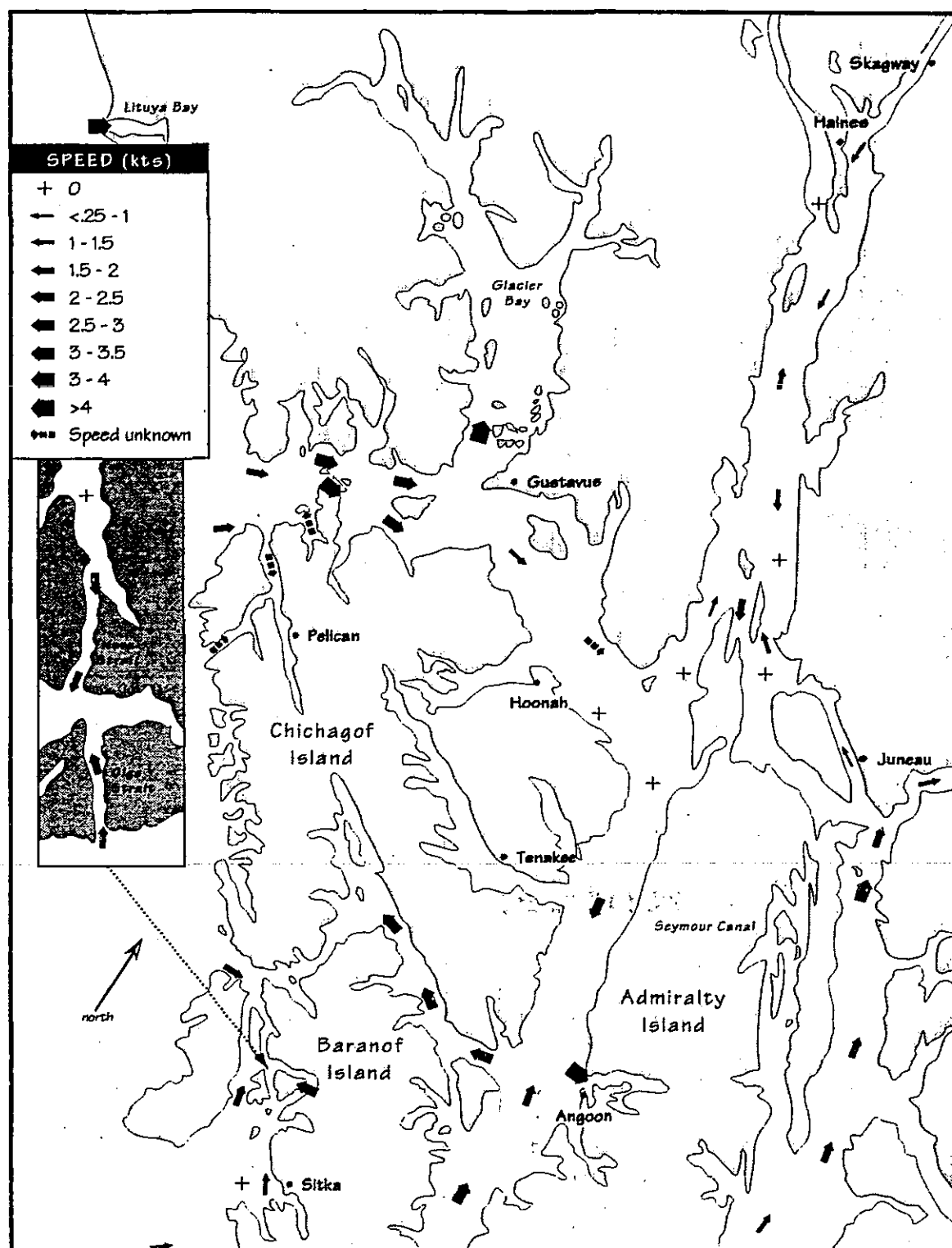


Figure 13

TYPICAL MAXIMUM FLOOD TIDAL CURRENTS / Central

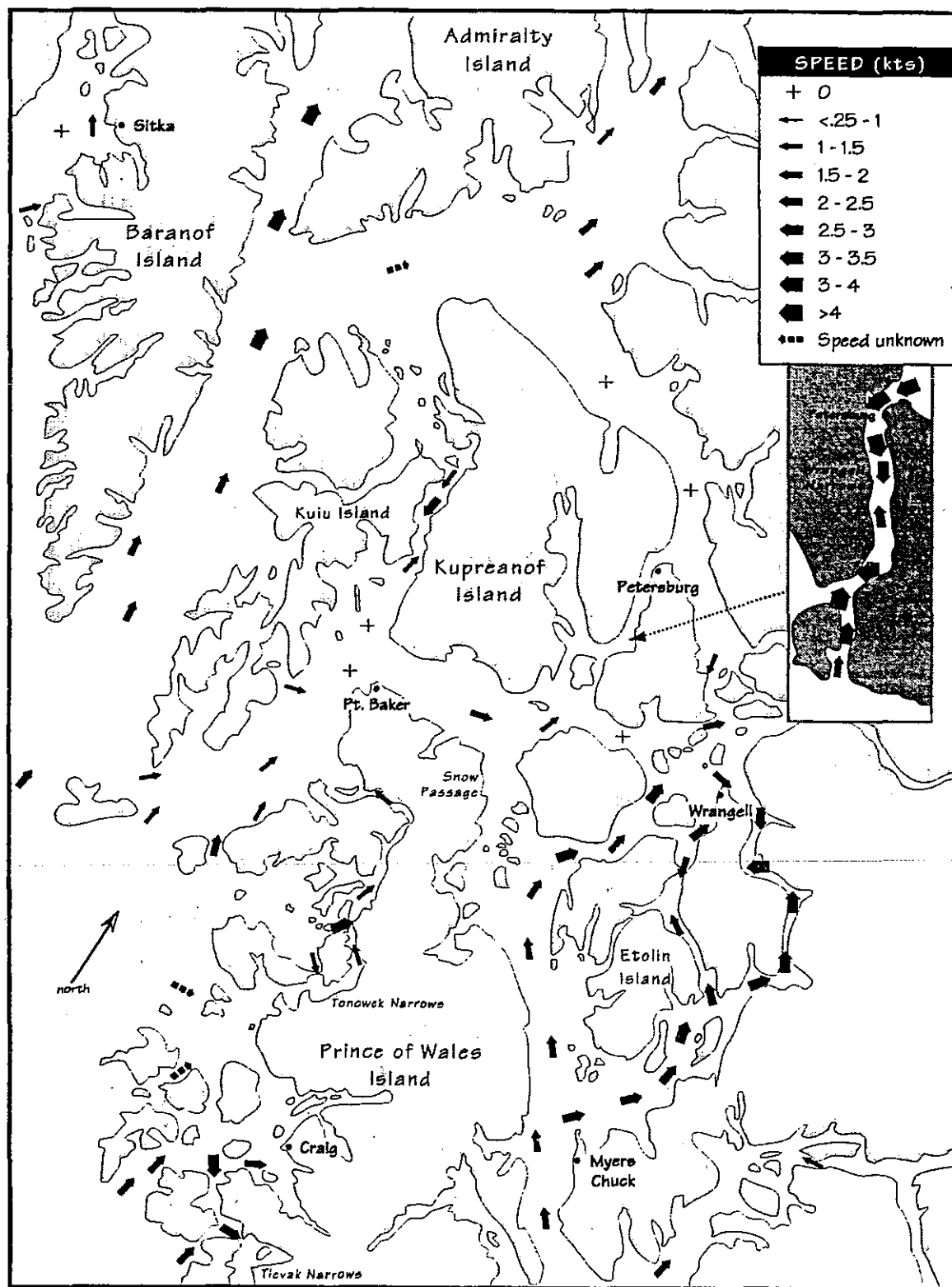


Figure 14

TYPICAL MAXIMUM FLOOD TIDAL CURRENTS / South

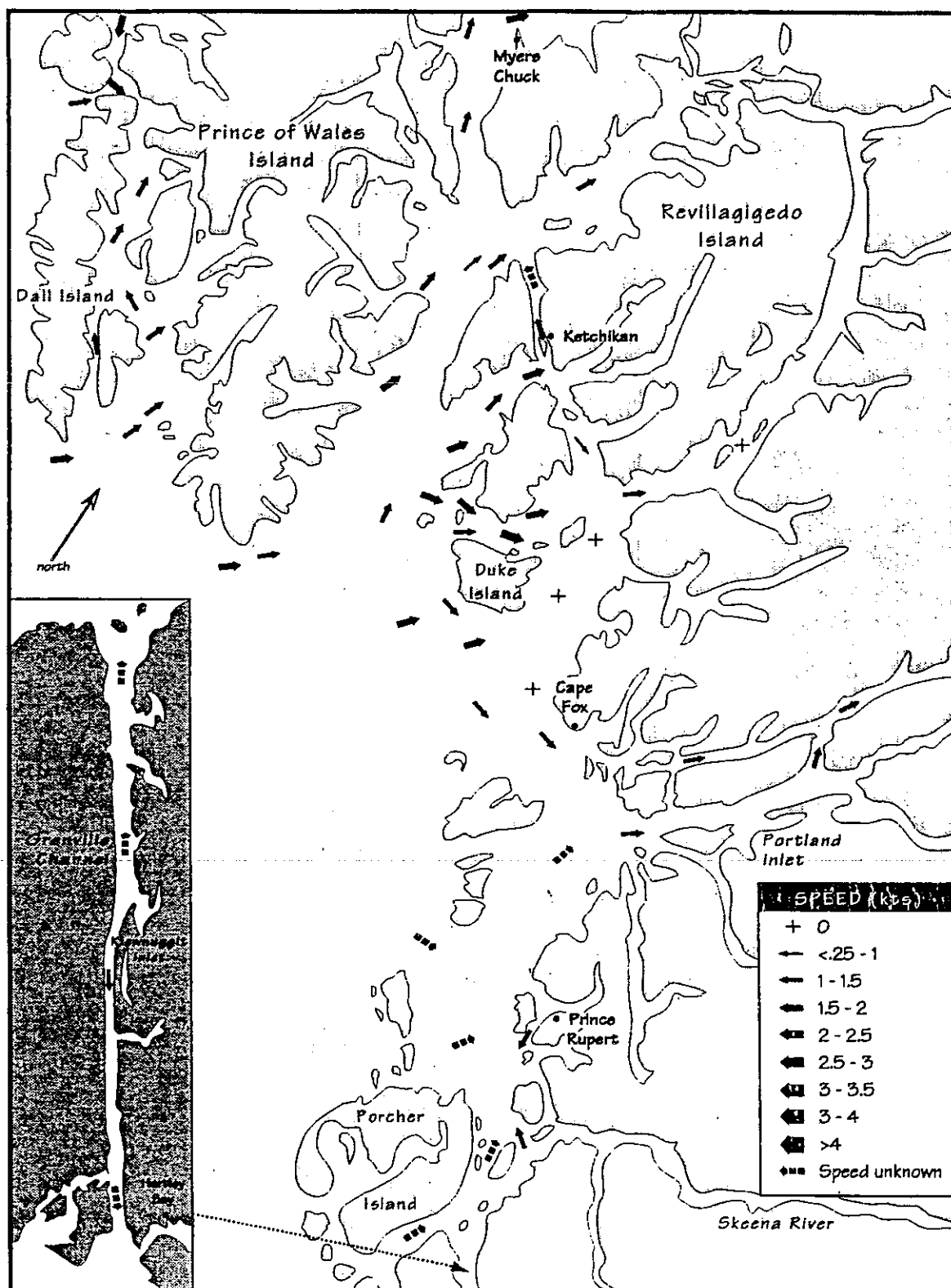


Figure 15

TYPICAL MAXIMUM EBB TIDAL CURRENTS / North

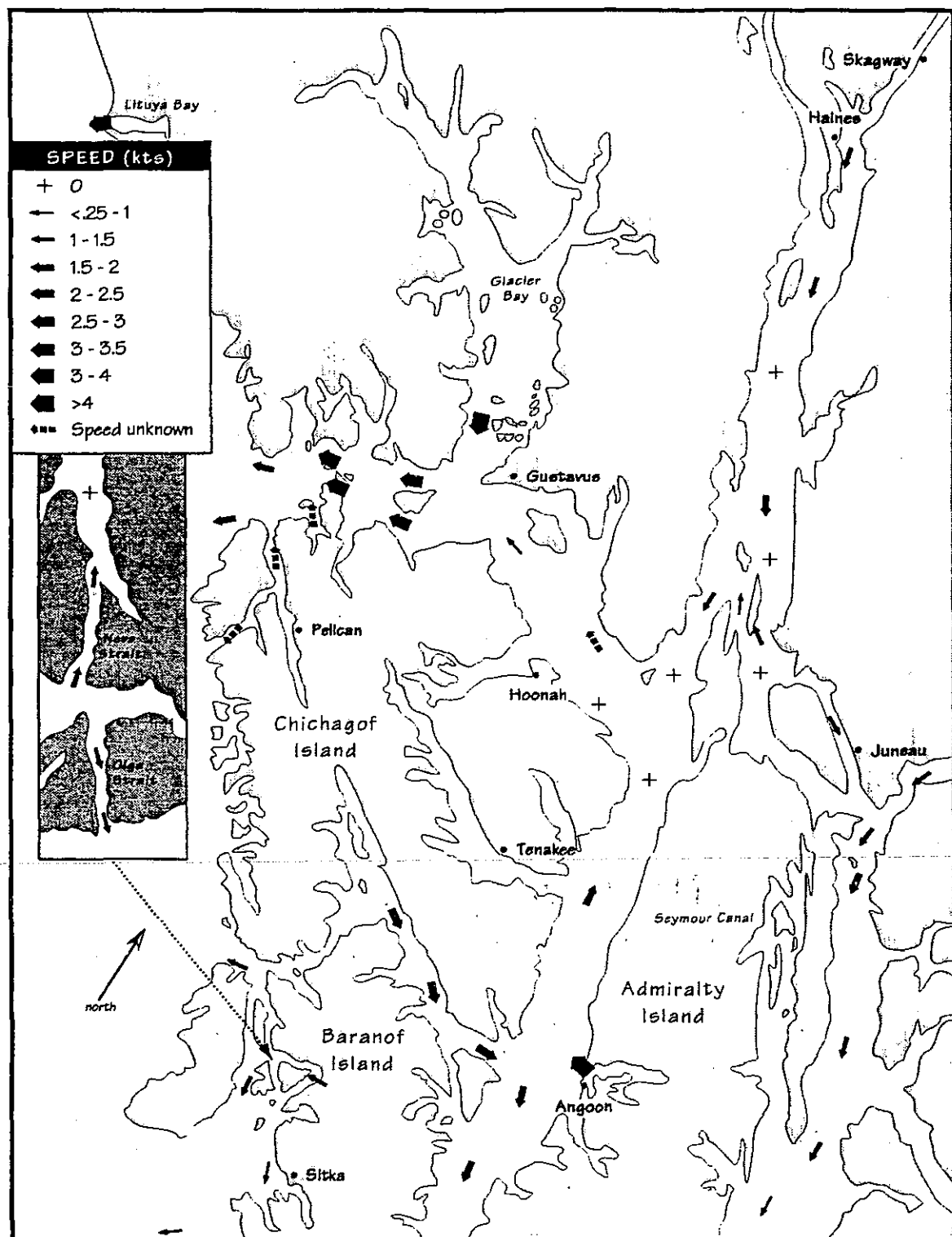


Figure 16

TYPICAL MAXIMUM EBB TIDAL CURRENTS / Central

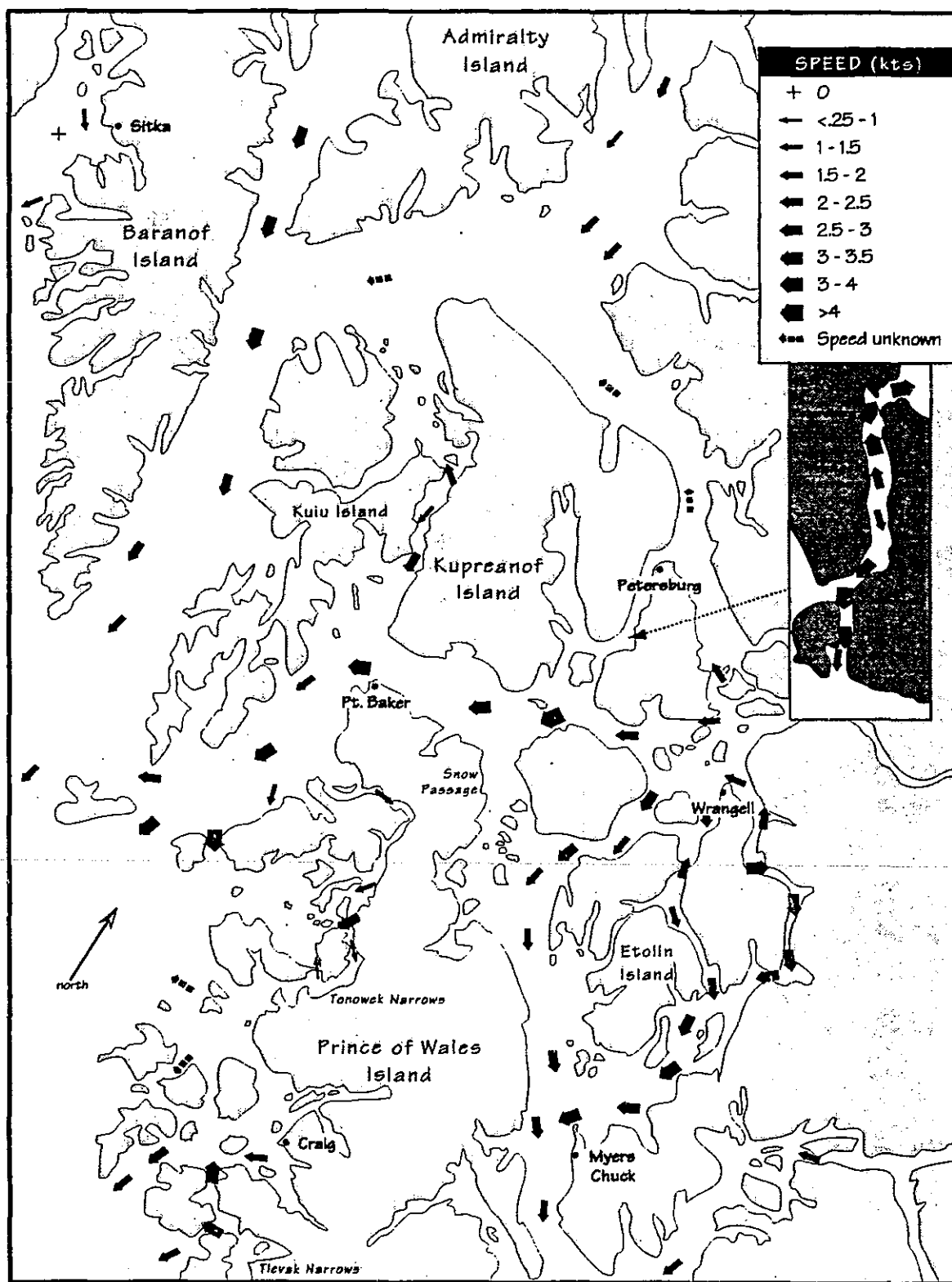
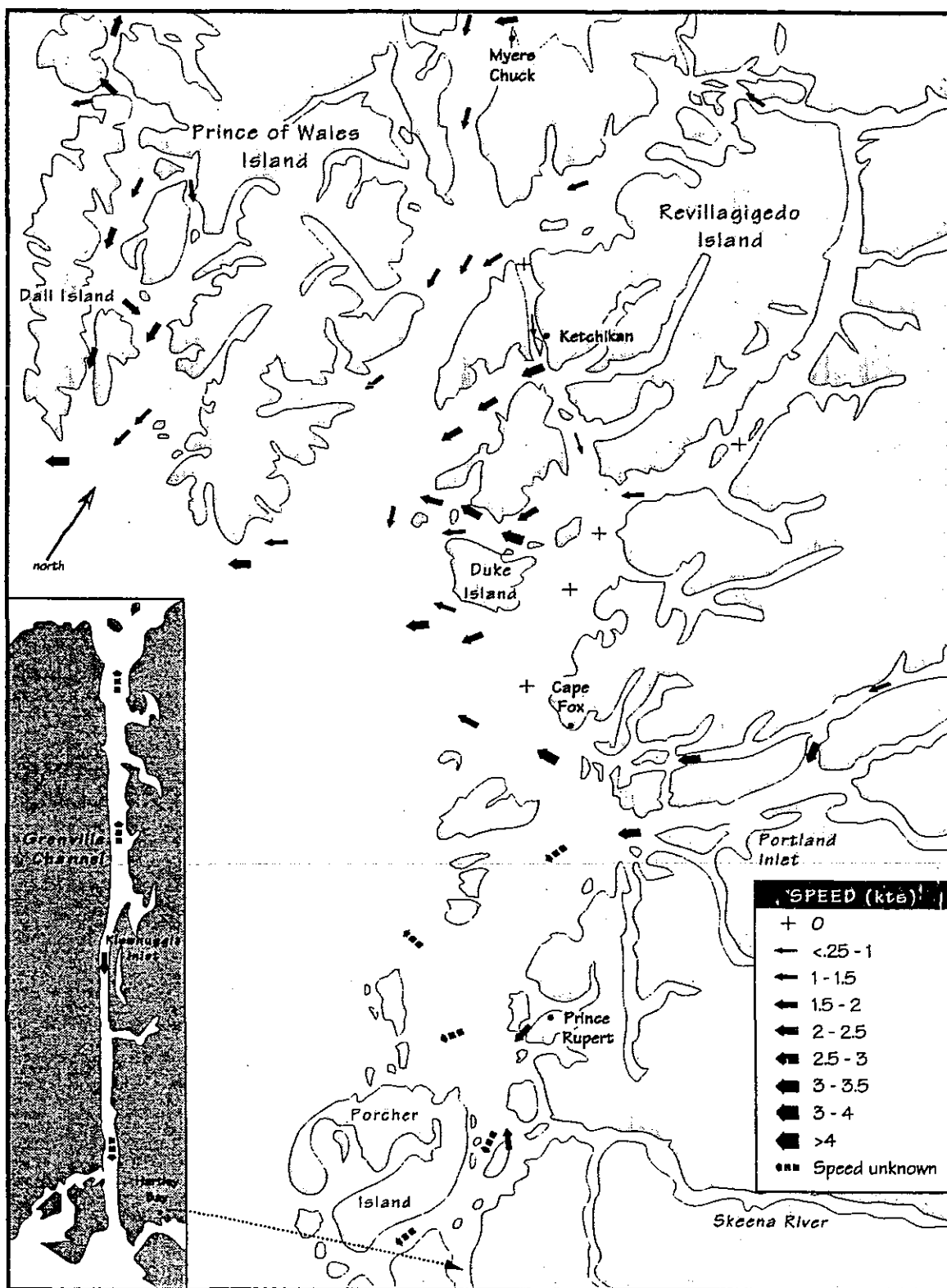


Figure 17

TYPICAL MAXIMUM EBB TIDAL CURRENTS / South



Appendix 3

Diesel Weathering Characteristics in Southeast Alaska (Figures 18-23)

Figure 18. Diesel: evaporation and dispersion*

Temp = 33°F; Winds = 2, 15, 30 knots

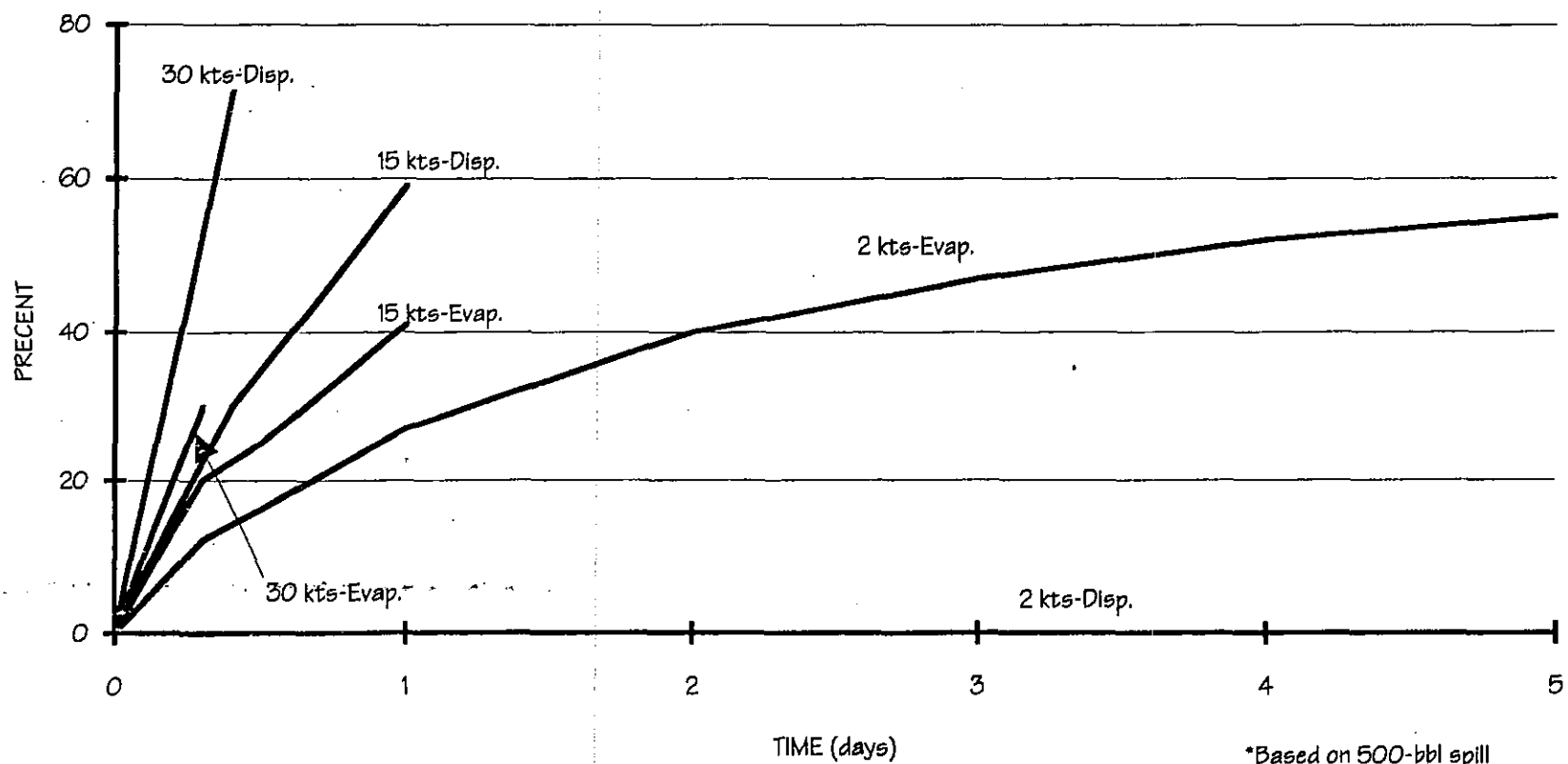


Figure 19. Diesel: Evaporation and dispersion*

Temp = 50°F; Winds = 2, 15, 30 knots

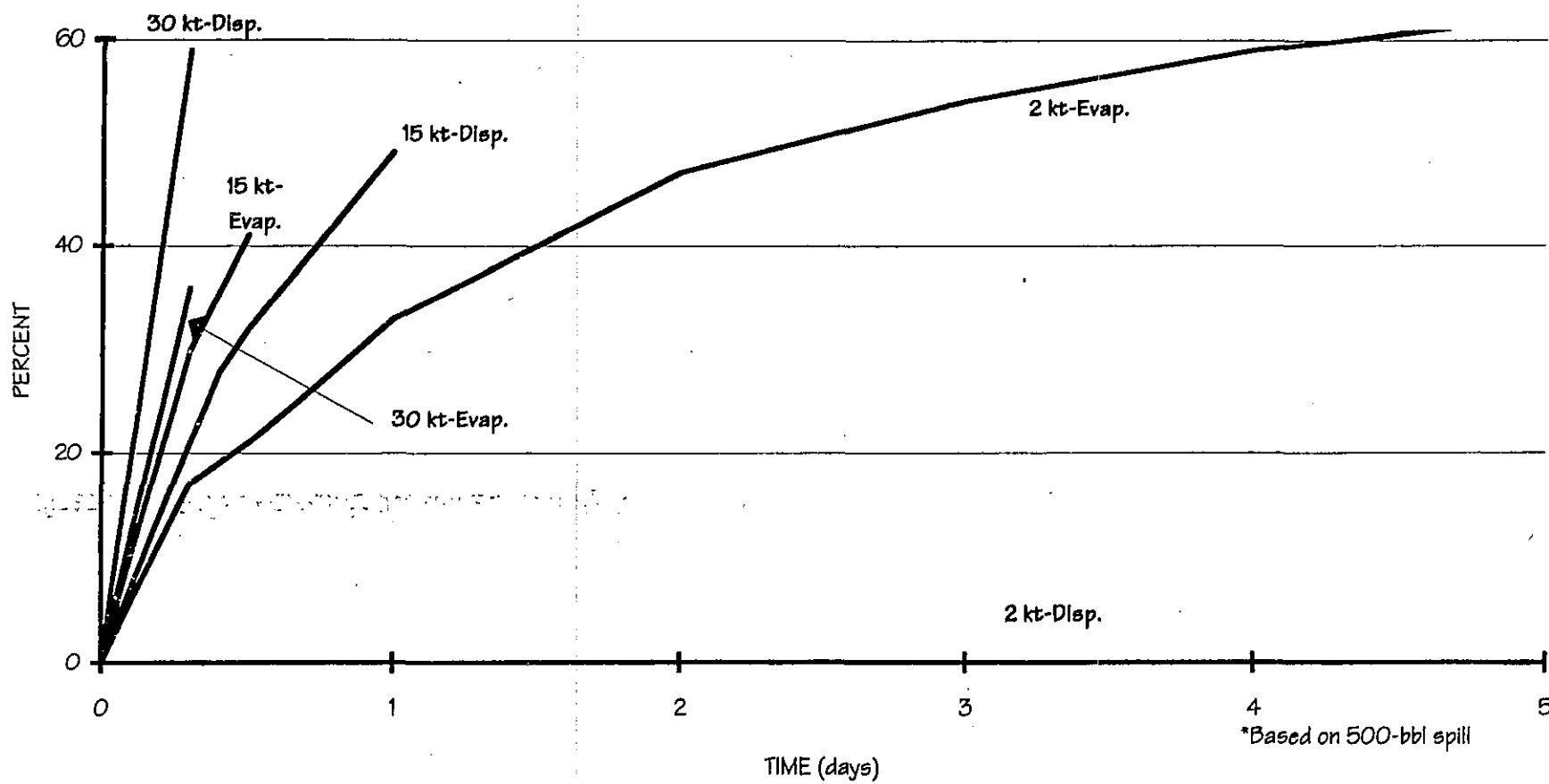


Figure 20. Evaporation comparison of diesel and North Slope crude*
Temp = 33°F; Wind = 15 knots

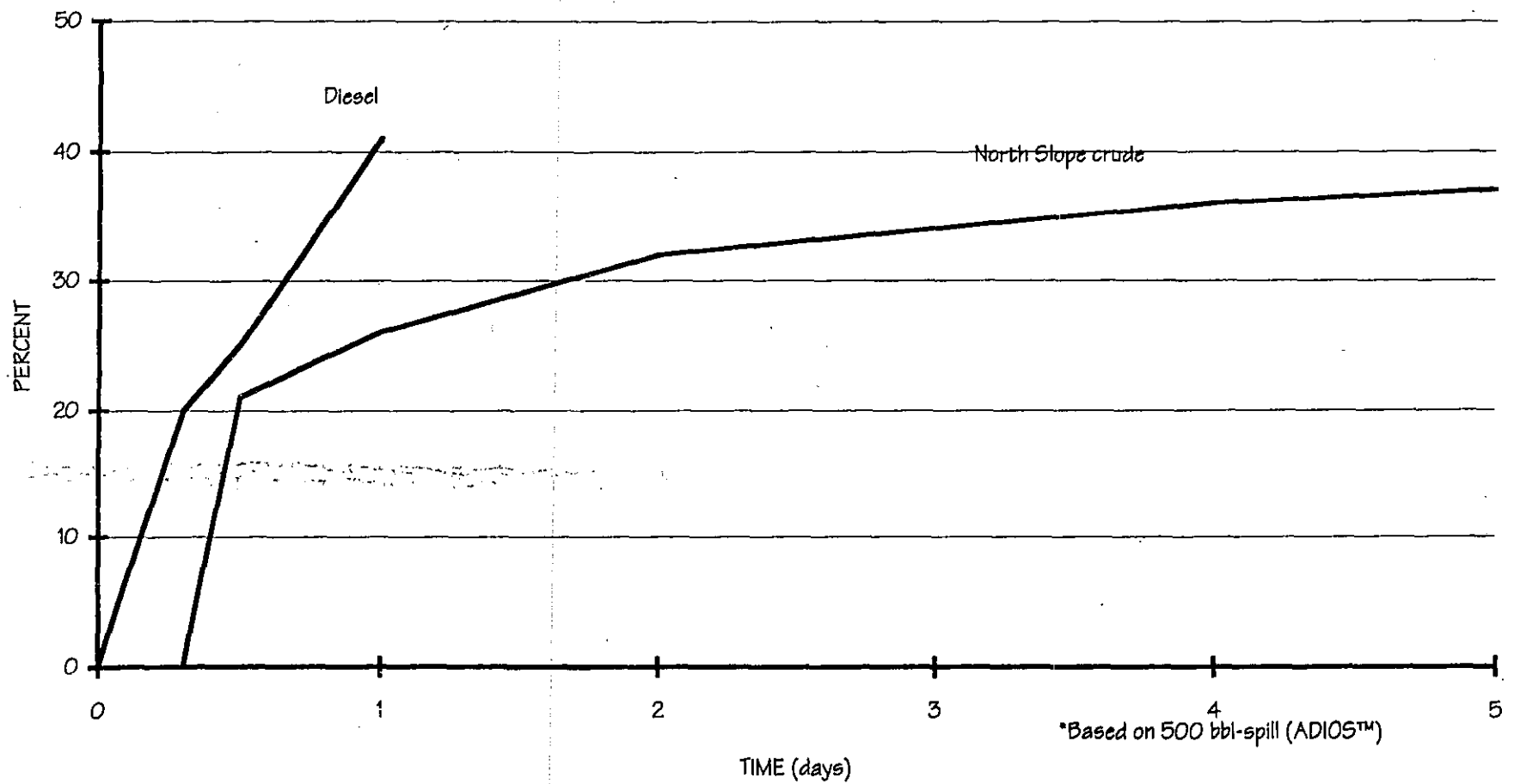


Figure 21. Evaporation comparison of diesel and North Slope crude*

Temp = 50°F; Wind = 15 knots

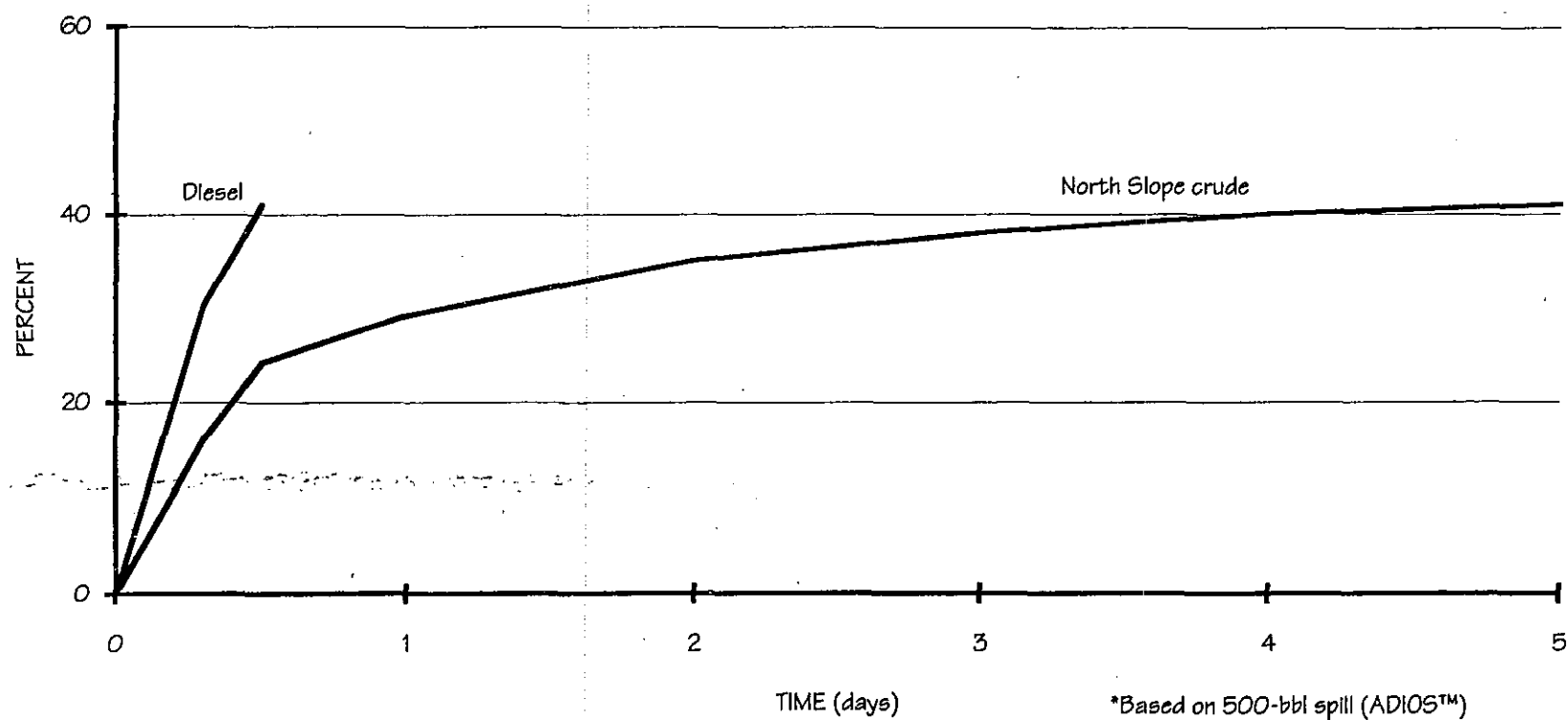
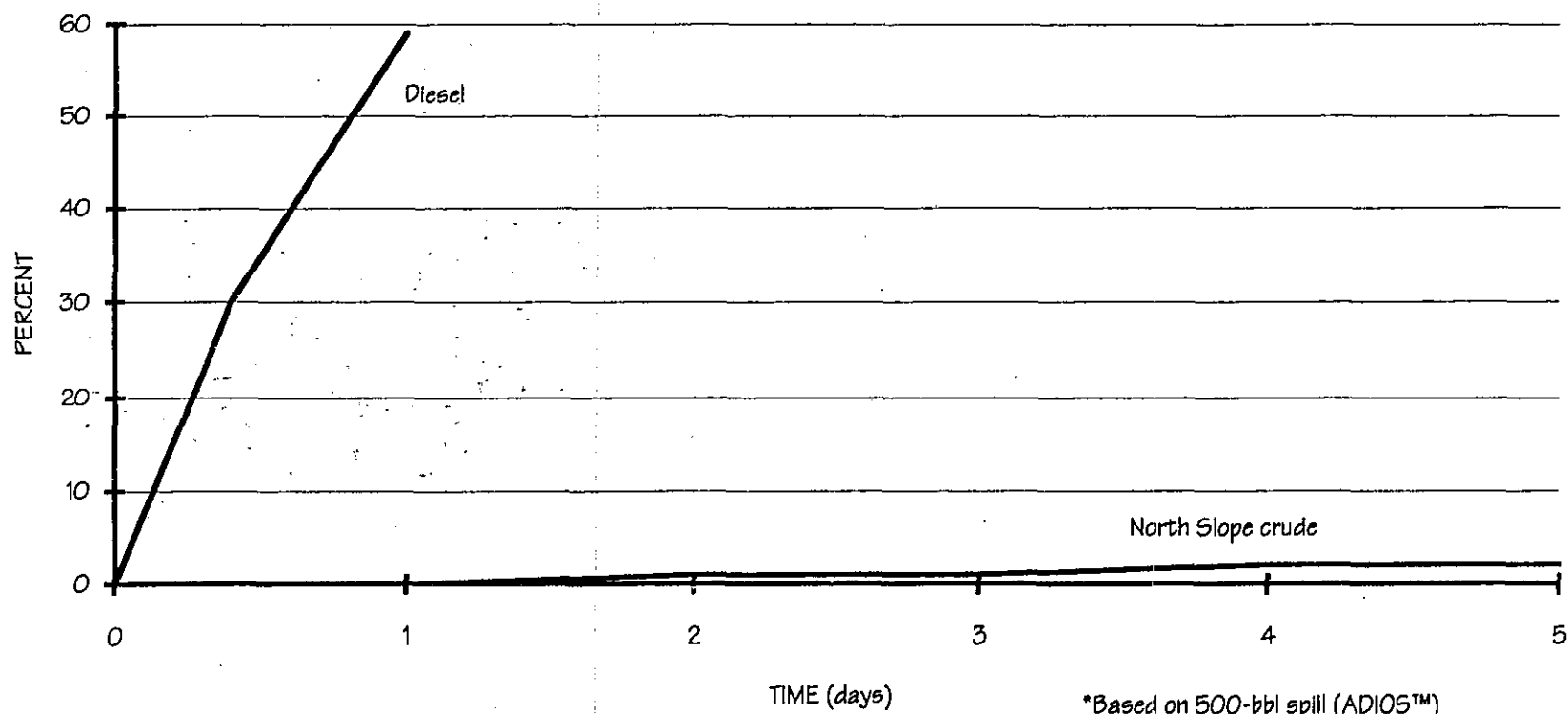


Figure 22. Dispersion comparison of diesel and North Slope crude*

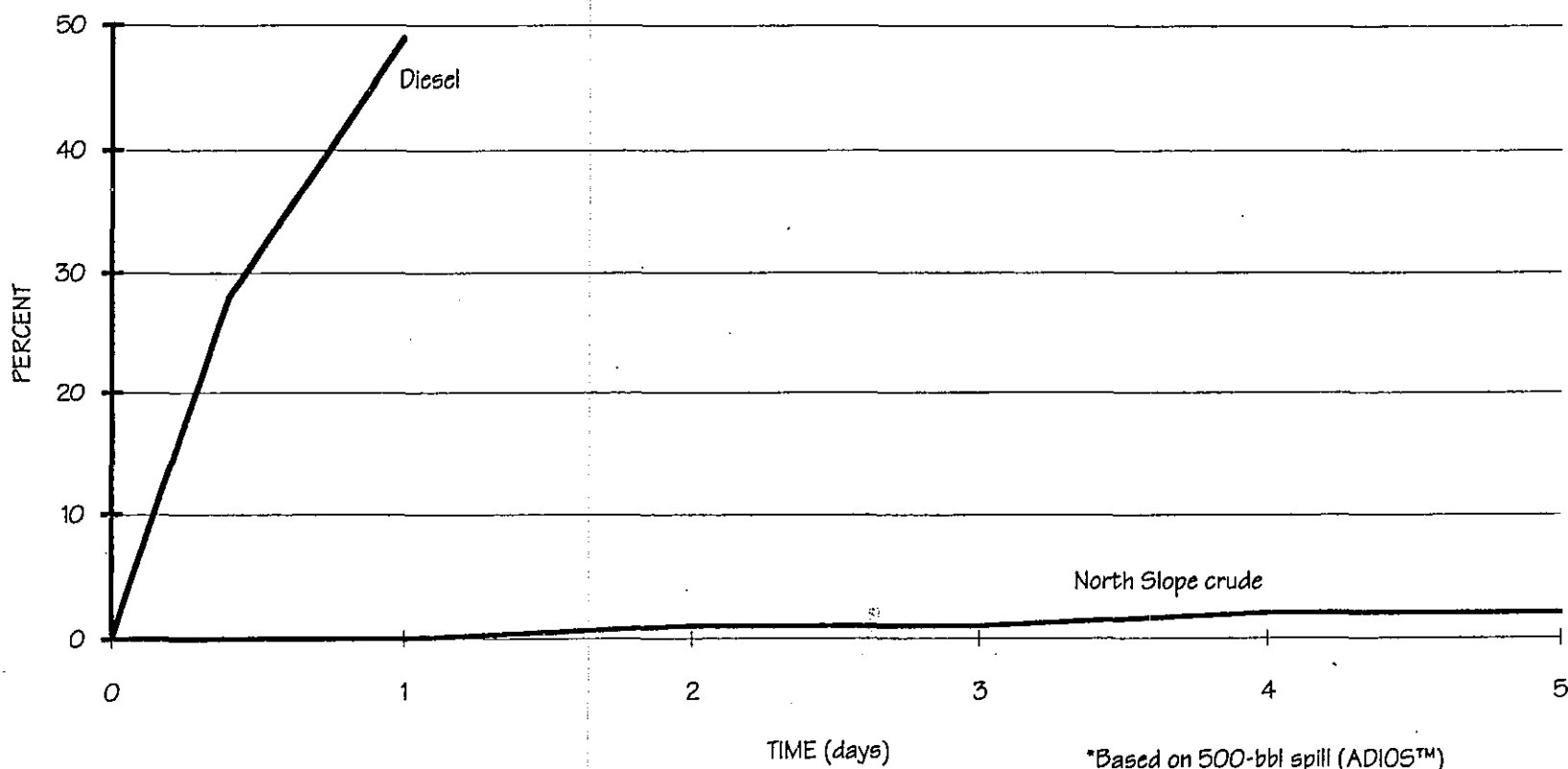
Temp = 33°F; Wind = 15 knots



*Based on 500-bbl spill (ADIOS™)

Figure 23. Dispersion comparison of diesel and North Slope crude*

Temp = 50°F; Wind = 15 knots



Appendix 4

NOAA Spill Reports for Major Southeast Alaska Oil Spills, 1979-2000; Figures 24-28, Tables 1-2

	Spill Report	Location	Date
1 ¹	Louisiana Pacific, Ketchikan Pulp Mill	Ward Cove, Ketchikan	January 26, 1979
2	Lee Wang Zin	Prince of Wales Island	December 25, 1979
3	Barge Annahootz	Wrangell Narrows	April 7, 1986
4	T/V Roughneck-Barge Annahootz	Sergius Narrows	April 11, 1986
5	M/V Vashon	Prince of Wales Island	June 7, 1986
A ²	M/V North Star	Prince of Wales Island	August 8, 1986
6	T/V Stuyvesant	Gulf of Alaska to Baja California	January 12, 1987
7	T/B Callapooya	Prince of Wales Island	February 26, 1987
B	M/V Honan Ace	Prince of Wales Island	April 15, 1987
C	P/C Kathryn M	Cape Spencer, Cross Sound	June 3, 1987
D	M/V Princess Kathleen	Juneau	September 10, 1987
8	T/V Stuyvesant	Gulf of Alaska off Dixon Entrance	October 6, 1987
9	Waterfront Dock Facility	Juneau	October 8, 1987
10	T/B Seaspon	Wrangell Narrows	October 27, 1987
E	F/V Icy Queen	Suemez Island, Meares Passage	January 15, 1988
11	T/V Frank H. Brown	Skagway	January 26, 1988
12	Juneau Ready-Mix	Lemon Creek, Juneau	February 29, 1988
F	F/V Defiance	Ketchikan	May 20, 1988
13	T/B Kenai	Dixon Entrance	July 18, 1988
14	F/V Melissa Chris	Otstolia Island, Peril Strait	August 19, 1988
G	F/V Valerie G	Nehenta Bay Gravina Island	November 28, 1988
15	M.V Mary Kathryn H	Prince of Wales Island	January 23, 1989
16	M/V Bonheur	Sitkoh Bay, Chatham Strait	August 12, 1989
17	F/V Ocean Pacific	Tongass Narrows, Ketchikan	August 12, 1989
18	CGC Woodrush	Sitka	December 14, 1989
19	T/V Frank H. Brown	Wrangell Narrows	January 20, 1990
20	F/V Lady Louise	Takatz Bay, Chatham Strait	July 14, 1990
21	Kensington Mine	Sherman Creek, Lynn Canal	August 24, 1990
H	T/B Chilkat Warrior	Prince of Wales Island	September 16, 1991
22	Tug May	Frederick Sound	November 22, 1992
23	M/V Yorktown Clipper	Glacier Bay National Park	August 18, 1993

¹ Arabic numbers represent actual spills

² Letters represent potential spills

24	F/V Billy and I	San Fernando Island	August 21, 1993
I	M/V Hanei Sky	Prince of Wales Island	October 26, 1993
25	F/V Westerly	Glacier Bay National Park	February 15, 1994
26	Skagway Harbor Diesel	Skagway	May 19, 1994
27	Lynn Canal Mystery Spill	Lynn Canal near False Point	May 19, 1994
J	F/V Bristol Enterprise	40 miles west of Sitka	October 27, 1994
28	F/V Alaskan Star	Dixon Entrance	January 16, 1995
29	F/V Miss Doreen	N. end, Kuypreanof Island	June 15, 1995
30	C/V Star Princess	Lynn Canal, Poundstone Rock	June 23, 1995
31	F/V Anna-K	Dixon Entrance	August 10, 1995
32	George Inlet Cannery	Ketchikan	May 10, 1997
33	Haines Dock	Haines	August 18, 1997
34	F/V Samaqu	Chatham Strait	April 16, 1998
35	M/V Wilderness Adventure	Dundas Bay, Glacier Bay National Park	June 12, 1999
K	F/V Su-Ce K	Sitka Sound	July 1, 1999
L	M/V Spirit of 98	Tracy Arm	July 27, 1999
M	M/V Pacsun	Icy Bay	February 26, 2000
36	New Port Walter	SE Baranof Island	November 18, 2000

Figure 24

SIGNIFICANT OIL SPILL INCIDENTS / 1979-2000

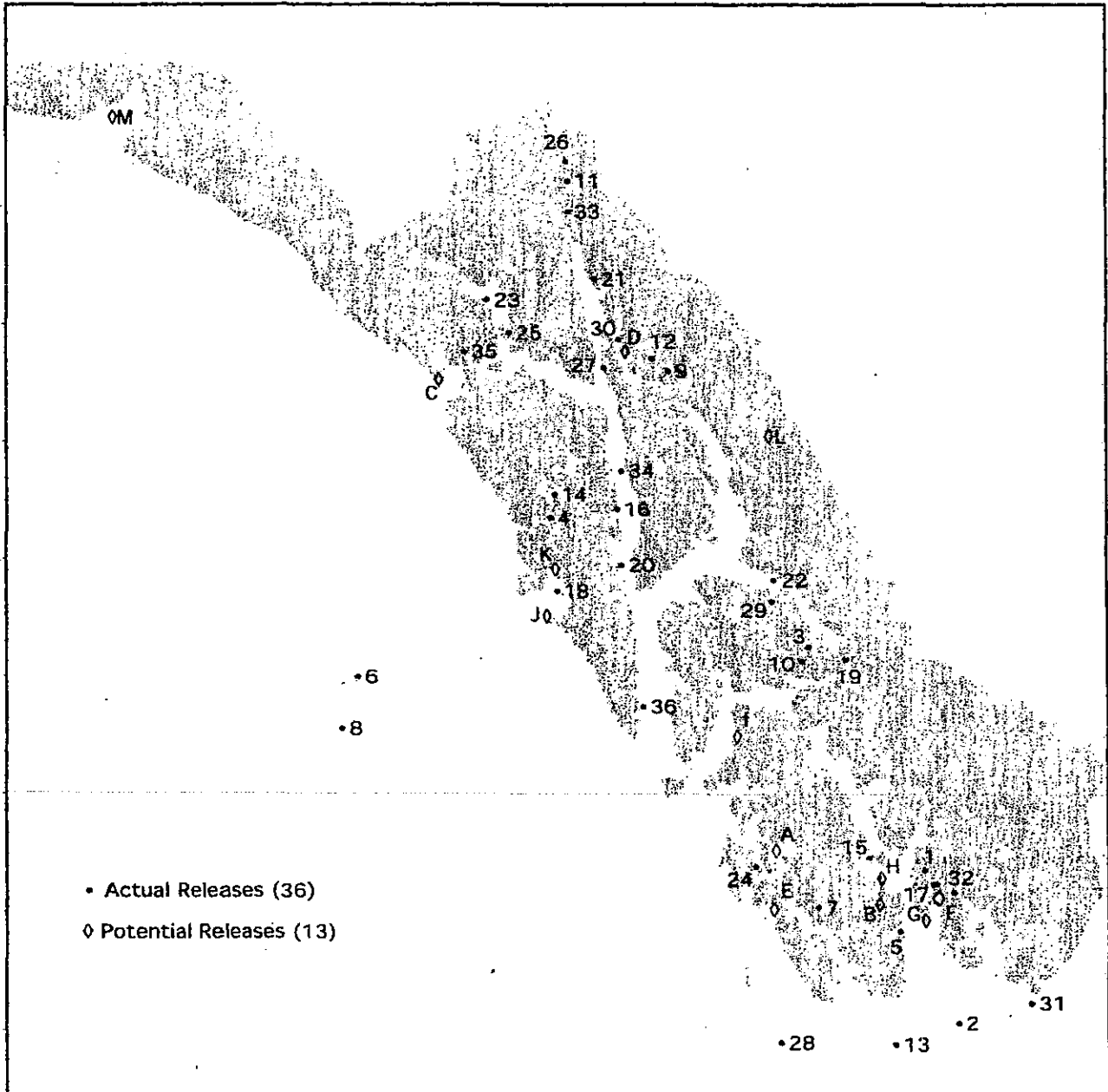


TABLE 1 - NOAA Responses to Major SE Alaska Oil Spills: 1979-2000

<u>Incident</u>	<u>Date</u>	<u>Source Type</u>	<u>Fuel Spilled</u>	<u>Amt (Bbls)</u>	<u>Amt (Gal)</u>	<u>Location</u>	<u>Env. Effects</u>	<u>Other Comments</u>
Ketchikan Pulp Mill	Jan-79	Onshore tank	No. 6 fuel	905	38,000	Ward Cove, Ketchikan	None	Valve opened due to labor strife
M/V Lee Wang Zin	Dec-79	Ore cargo vessel	Bunker C & Lube	5000	210000	Dixon Entrance	Mortality of furbearers & waterfowl, little effect on intertidal species	Worst spill in SE; ~350 miles of shoreline oiled
T/B Annahootz	Apr-86	Tank Barge	Diesel	2143	90,000	Wrangell Narrows	None observed	Grounded, but overflights revealed no visible signs of spill
Tug Roughneck	Apr-86	Tug Vessel	Diesel	190	8000	Sergius Narrows	None observed	Tug sank resulting in slow continuous leak w/ light sheen
M/V Vashon	Jun-86	Ferry Vessel	Diesel	124	5200	Johnson Cove Prince of Wales Isl.	Minimal; good mid-July salmon run	Sorbents effective in containing & collecting considerable diesel
T/V Stuyvesant	Jan-87	Tanker vessel	N. Slope crude	15000	630000	Gulf of Alaska	None	Dispersed by GOA storm; surveillance only
T/B Callapooya	Feb-87	Tank Barge	Diesel	214	9000	Hydaburg, Prince of Wales Island	Possible short-term tainting of clam beds	No response possible due to rapid dispersal of diesel
T/V Stuyvesant	Oct-87	Tanker vessel	N. Slope crude	14286	600,000	Gulf of Alaska	None	Dispersed by GOA storm
Waterfront Dock Fac.	Oct-87	Onshore Tank	Propane	1600#		Juneau	None	Leaked secured after 5 hours
T/B Seaspan	Oct-87	Tank Barge	Diesel	393	16,500	Wrangell Narrows	None observed	No response; dispersed by current
M/V Frank H. Brown	Jan-88	Tanker vessel	Gasoline	67	2814	Skagway	None	Loss probably over 200 miles
Juneau Ready-Mix	Feb-88	Onshore tank	A heavy oil	29	1200	Lemon Crk, Juneau	Minor, short-term oiling of some bird & salmon habitat	RP collected ~ 93% in 3 days
T/B Kenai	Jul-88	Tank Barge	Diesel	12	500	Dixon Entrance	None	No response; an old thru-hull fitting was leak source
F/V Melissa Chris	Aug-88	Fishing vessel	Diesel	36	1500	Otsoia Isl., Peril St.	None	Grounded & lost fuel through fuel vents
T/V Mary Kathryn H	Jan-89	Tug vessel	Diesel	2	100	Smith Cove, Skowl Arm, Prince of Wales Isl.	None	Grounded; balance of fuel pumped off
M/V Bonheur	Aug-89	Pleasure craft	Diesel	18	750	Sitkoh Bay, Chatham St.	None	Grounded and boomed preventing a greater loss
F/V Ocean Pacific	Aug-89	Fishing vessel	Diesel	143	6000	Ketchikan	None	Leak slowly continues to present
CGC Woodrush	Dec-89	Coast Guard cutter	Diesel	12	500	Sitka Channel	None	Natural dispersion slowed by windless, calm water conditions

MAJOR SE ALASKA OIL SPILLS: 1979-2000 (cont.)

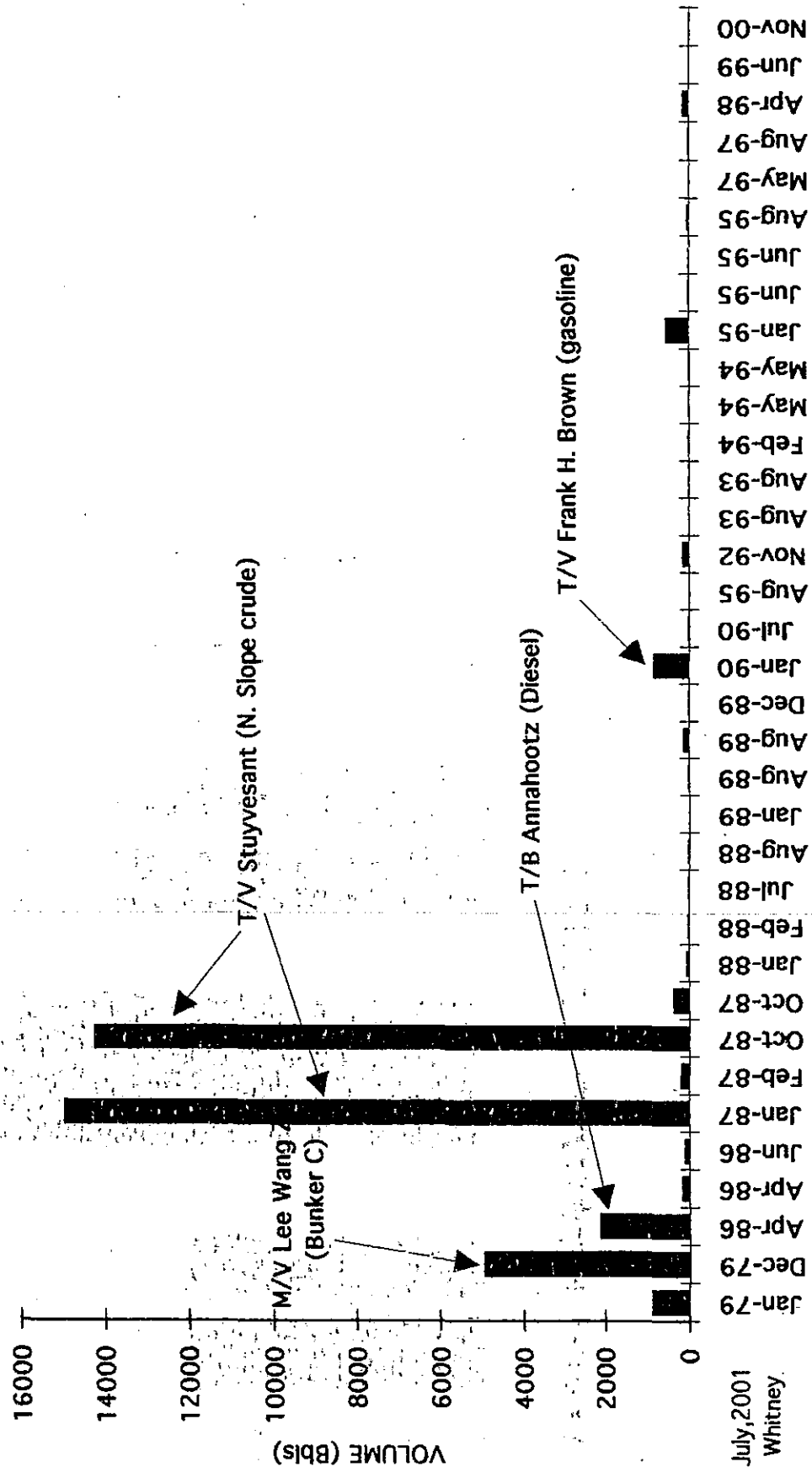
Incident	Date	Source Type	Fuel Spilled	Amt (Bbls)	Amt (Gal)	Location	Env. Effects	Other Comments
F/V Lady Louise	Jul-90	Fishing vessel	Diesel	17	700	Takatz Bay, Chatham St.	None	Vessel sank & was refloated
Kensington Mine	Aug-95	Onshore tank	Diesel	2	100	Sherman Crk, Lynn Canal	None	RP collected most diesel upstream
T/V May	Nov-92	Tug vessel	Diesel	167	7014	Farragut Bay, Frederick Sd, NW of Petersburg	None	Capsized & sank w/ log boom still in tow
M/V Yorktown Clipper	Aug-93	Cruise ship	Diesel	2	100	Glacier Bay Nat'l Pk	None	Grounded; fast action by CG kept vessel from sinking
F/V Billy and I	Aug-93	Fishing vessel	Diesel	0	10	San Fernando Isl, W of Prince of Wales Island	None	Grounded; fast action by crew prevented further pollution
F/V Westerly	Feb-94	Fishing vessel	Diesel	36	1500	Glacier Bay Nat'l Park	None	Sank; slow release of fuel quickly dissipated by very high winds
Whitepass Fuel Facility	May-94	Onshore Pipeline	Diesel	12	498	Skagway Harbor	None	Full & successful response by RP
Mystery Spill	May-94	Unknown vessel	Heavy oil	5	200	False Point Retreat, Lynn Canal	None	Response by CG; SCAT assessed shoreline; no impacts noted
F/V Alaskan Star	Jan-95	Fishing vessel	Diesel	571	24,000	Dixon Entrance	None	Sank w/ presumed loss of fuel in 1000 feet of water depth
F/V Miss Doreen	Jun-95	Fishing vessel	Diesel	6	260	Portage Bay, N side Kupreanof Island	None	Capsized & sank for unknown reason
C/V Star Princess	Jun-95	Cruise ship	IFO-380	~2	<100	Poundstone Rock, Lynn Canal	None	Potential of 271,000 gals w/ 2000 people onboard
F/V Anna-K	Aug-95	Fishing vessel	Diesel Lube Oil	60 ~2	2500 100	Off Kanagunut Island in Dixon Entrance	None	Vessel burned and sank
George Inlet Cannery	May-97	Shoreside Fac.	Bunker C	~2	100	Ketchikan	None	Minor shoreline oiling removed mostly w/sorbents
Haines Dock	Aug-97	Unloading Barge	Asphalt emulsion	24	1000	Haines, Ak	None	800 gals recovered from sandy bottom
F/V Samaqu	Apr-98	Fishing vessel	Diesel Ammonia	155 600#	6500	Chatham Strait	None	Vessel burned and sank
M/V Wilderness Adv.	Jun-99	Cruise vessel	Diesel Lube Oil	~1 <1	< 40 <10	Dundas Bay, Glacier Bay Nat'l Park	None	Clever salvage of grd. vessel averted major release

TABLE 2 - SIGNIFICANT POTENTIAL OIL SPILL INCIDENTS, SE ALASKA, 1979-2000

<u>Incident</u>	<u>Date</u>	<u>Source Type</u>	<u>Fuel Type</u>	<u>Potential Amt (Bbls)</u>	<u>Amt (Gal)</u>	<u>Location</u>	<u>Other Comments</u>
M/V North Star	Aug-86	Cruise Ship	Diesel	595	25,000	San Alberto Bay Prince of Wales Isl.	Grounded & damaged; refloated after pumping water out of hull
M/V Honan Ace	Apr-87	Freighter vessel	Bunker C	7143	300,000	Dora Bay, Prince of Wales Island	Grounded & refloated; vessel had double-bottomed hull
P/C Kathryn M	Jun-87	Pleasure Craft	Gasoline	3	130	Cape Spencer, Cross Sd	Grounding; no fuel released
M/V Princess Kathleen	Sep-87	Cruise ship	Bunker C	?	?	Lena Pt, Juneau	Sank in 1952; had become excellent fish habitat
F/V Icy Queen	Jan-88	Fishing vessel	Diesel	17	700	Meares Passage, Prince of Wales Isl.	Grounded and refloated w/o fuel loss
F/V Defiance	May-88	Fishing vessel	Diesel	71	3000	SE Alaska Fisheries pier, Ketchikan	Pier owner removed diesel be- fore vessel was scuttled
F/V Valerie G	Nov-88	Fishing vessel	Diesel	6	250	Nehenta Bay, Granvina Island	Grounded; fuel pumped off; vessel abandoned
			Lube oil	1	25		
T/B Chilkat Warrior	Sep-91	Tank Barge	Diesel	2524	106,000	Smith Cove, Skowl Arm, Prince of Wales Island	Grounded; refloated at hi tide; only empty tanks damaged
			Gasoline	71	3000		
M/V Hanei Sky	Oct-93	Log freighter	Bunker C	3250	136500	Fontaine Isl, Shakan Bay, Prince of Wales Island	Grounded by high winds; but undamaged when refloated
			Diesel	300	12600		
F/P Bristol Enterprise	Oct-94	Fish Processor	Diesel	1425	59850	Sitka Sound	Human health hazard from burning of urethane
F/V Su-Ce K	Jul-99	Fishing vessel	Diesel	20	800	Sitka Sound	Vessel sank after fire in engine room
M/V Spirit of 98	Jul-99	Cruise vessel	Diesel	225	9400	Head of Tracy Arm	Intentional grounding after engine room hole prevented sinking
			Lube Oil	16	1000		
M/V Pacsun	Feb-00	Log Freighter	IFO-380	~5000	210,000	Icy Bay, Northern Gulf of Alaska	Vessel refloated from grding after full log lightering and assistance from two tugs

Figure 25

Southeast Alaska OIL SPILL VOLUMES: '79-2000 (NOAA supported spills only)



Southeast Alaska
OIL SPILL VOLUMES: '79-2000
(excluding the three largest spills)

Figure 26

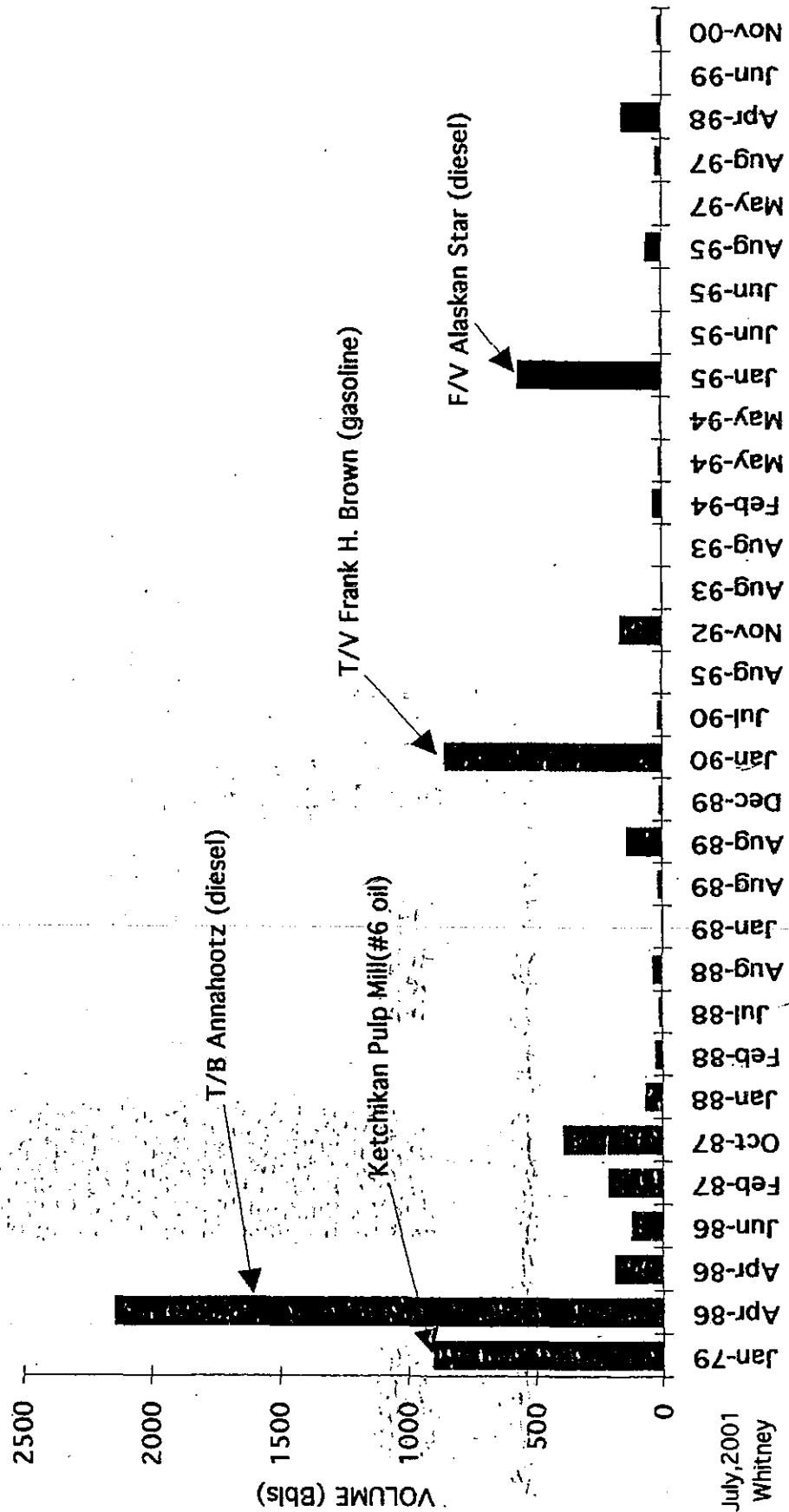


Figure 27

Southeast Alaska
NUMBERS OF SPILLS BY SOURCE: '79-2000
(NOAA supported spills only)

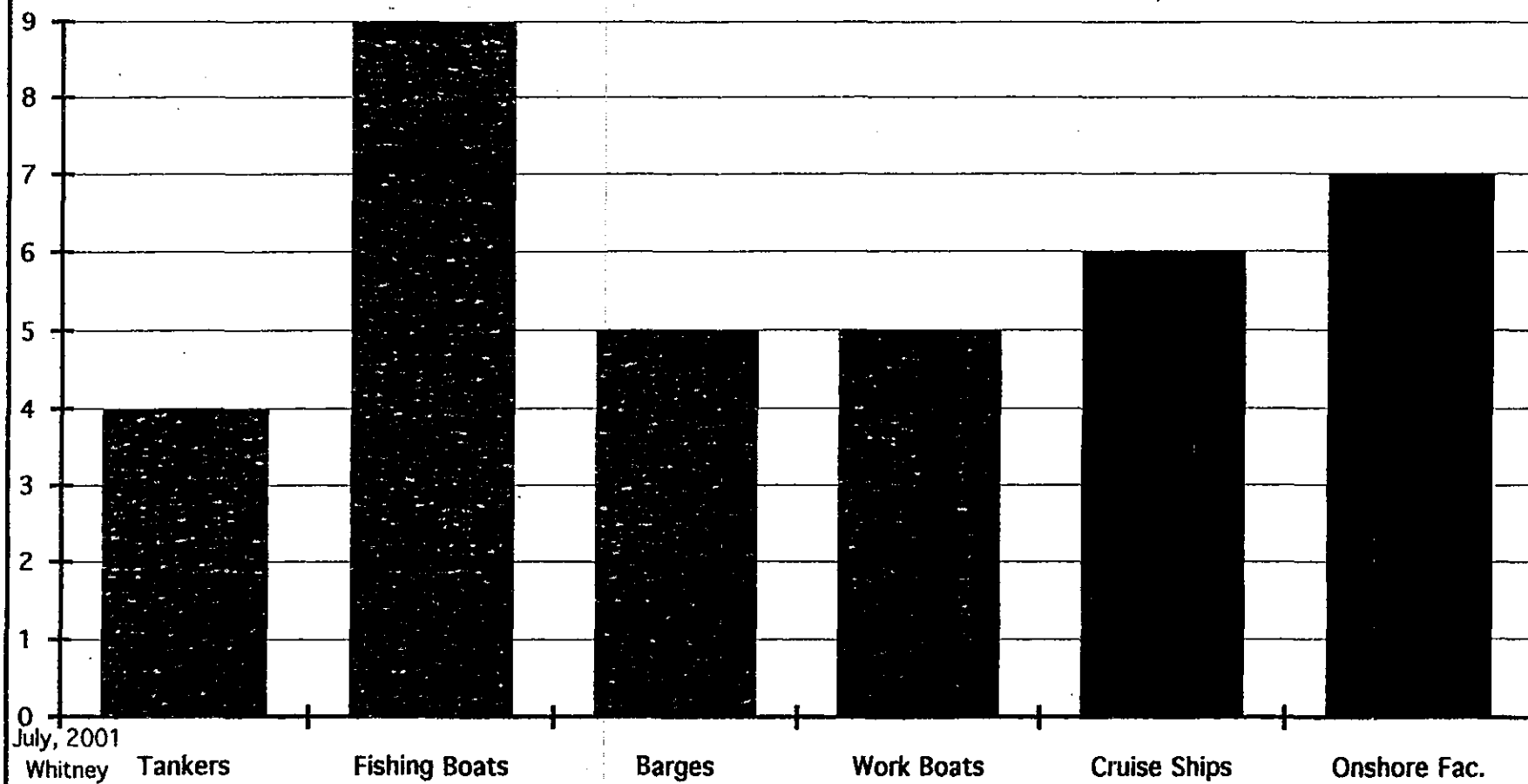
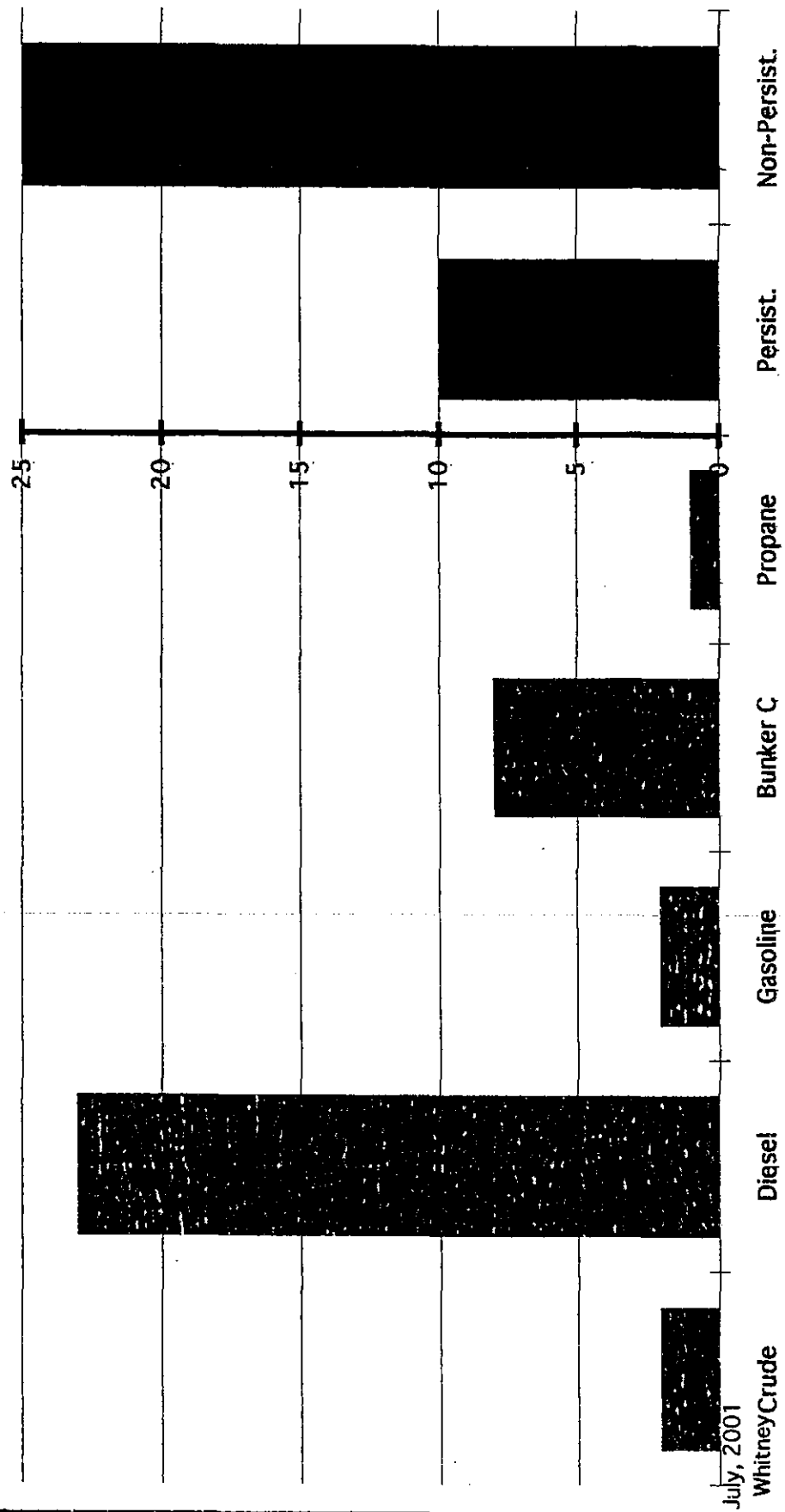


Figure 28

Southeast Alaska
 NUMBERS OF SPILLS BY FUEL TYPE: '79-2000
 (NOAA supported spills only)



Louisiana Pacific, Ketchikan (LPK) Pulp Mill Oil Spill
Ward Cove, Ketchikan, Alaska
January 26, 1979

SUMMARY OF INCIDENT

The spill was first discovered at about 10:45 pm on January 26, 1979. A strainer on one of the pumps in a pump house next to a 55,000-barrel oil storage tank was loose and allowed number 6 (Bunker C) fuel oil to flow into an adjacent containment area. A concrete wall on the downhill side of the containment area had not been sunk to bedrock. Consequently, oil seeped out under the wall and into a fast-moving watercourse adjacent to the storage tank. Some leakage also occurred through unplugged drain pipes. The oil reached Ward Cove and was kept within the cove by log rafts and because the tide was flooding during the time of the spill. It is now estimated that 38,000 gallons escaped; 13,000 remained within the containment area; and 25,000 gallons spilled into the cove. When the leak was discovered, workmen broke a hole through the roof of the pumphouse and shut off the valves. A log boom was placed across the mouth of Ward Cove. This boom was in place by 1:00 am on January 27. Boom was also set up between the spill site and the mouth of Ward Creek. Small amounts of oil leaked past the log boom and into Tongass Narrows. Absorbent pillows placed between boom logs helped to minimize this problem.

NOAA RESPONSE

NOAA personnel arrived on-scene around noon on January 30, and immediately toured the affected area with the U.S. Coast Guard, Alaska Department of Fish and Game, and pulp mill representatives, noting spill history, site layout, cleanup and response efforts, and the environmental setting. It was apparent that rapid containment and cleanup combined to avert significant oil transport and more complicated damages. Divers found no oil below approximately 15 cm depth from the surface. The Coast Guard asked that NOAA perform a damage assessment, however, NOAA noted that due to a lack of readily apparent impacts to the environment, a damage assessment was not necessary. Extensive use of Ward Cove for commercial and private purposes and the lack of prior research made such damage assessment impracticable. Nevertheless, NOAA took four oil samples from the oil contained by the dike, and four weathered oil samples from the surface waters alongside the boom in Ward Cove.

RESOURCES AT RISK

Most of the resource information was obtained from the Ketchikan office of the Alaska Department of Fish and Game. An estimated 2 million pounds of herring schooled in the cove on November 11, 1978, and these fish were still in the area two months later when the spill occurred. Associated with the herring are birds (chiefly cormorants and gulls) and sea lions. There were usually two or three sea lions in the cove, but as many as 12 had been seen at one time. Evidence indicated that the herring and associated wildlife remained after the spill although they did move off to the opposite side of the cove. Steelhead and Dolly Varden were probably beginning to move up Ward Creek, but salmonid outmigration would not begin for about one and a half to two months.

CONCLUSION

Cleanup of the sludge started on the morning of January 27. Workmen scraped up the oil in shovels, placing it in 55-gallon drums, which were lifted to storage on shore. Cleanup of the sludge was essentially complete by evening on January 30. A more persistent problem, though, was the cleanup of the sheen produced by the oil-soaked pilings and logs. The pulp mill boomed off an area, steam-cleaned the logs, boats, and other affected materials while constantly skimming the area. Impacts of the spill on wildlife were minimal. No dead birds or fish were seen.

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Kelly, Don. 1979. Incident Report. Ketchikan: Alaska Department of Fish and Game.

Wescott, Burl and Will Ernst. 1979. Incident Report. Anchorage: Hazardous Materials Response Project, National Oceanic and Atmospheric Administration.

THE WRECK OF THE LEE WANG ZIN

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ABSTRACT: *Environmental effects and cleanup efforts involved in Alaska's largest (length of shoreline affected) marine oil spill are recounted. Some 2,381 to 7,143 barrels (bbl) of heavy bunker fuel and diesel oil were released during high winds into Alaskan and Canadian waters as a result of the 1979 Christmas Day capsizing of the Taiwanese ore freighter, M/V Lee Wang Zin, off the southern edge of the Alaska Panhandle. Over 350 miles (mi) of shoreline were contaminated within a week of the accident, and oil slicks identified as products of the spill were sighted a month later, 210 mi north of the vessel's grounding site off the southeast tip of Prince of Wales Island. During tow to deep-water burial, the vessel unexpectedly sank 8 mi from an internationally known sea bird sanctuary. Overall, many sensitive fish, mammal, bird, and shellfish resources were potentially impacted, furbearers and waterfowl, probably most seriously. Moreover, severe weather conditions and rugged terrain presented unique problems for cleanup operations, access, and logistics. By the end of April, 1980, some 585 bbl of oil had been removed at a cost of \$2,089,000 (\$3,570/bbl). Additional oil deposits were being found and disposed of through October, but the final resting places of some oil patches still remained to be located. Oil recovery and burning methods, including a successful propane-torching technique, are described and results tabulated. Cooperative emergency and scientific efforts involved federal, state, and local representatives, including the U.S. and Canadian Coast Guards, the National Oceanic and Atmospheric Administration, U.S. Fish and Wildlife Service, U.S. Forest Service, the Alaska Department of Environmental Conservation, Alaska State Troopers, and the Ketchikan Department of Fish and Game. Monitoring of some areas will continue for several years, and it has been recommended that certain areas be dedicated for continuing scientific study.*

M/V *Lee Wang Zin*. Only the SOS and call sign were received, each three times. Four hours later, a Canadian Coast Guard helicopter had located the red hull of a large overturned vessel, about 258 mi to the northwest in Dixon Entrance, between Alaska and Canada. There were no signs of survivors, the vessel was emitting large quantities of oil, winds were southeast 30 to 40 knots (kt), and seas were 15 to 20 feet (ft). The vessel was later confirmed to be the Taiwan-owned ore freighter M/V *Lee Wang Zin* en route from Prince Rupert with 30 crewmen, 53,310 long tons of taconite pellets, 1,111 metric tons of bunker fuel, and 67 long tons of diesel oil aboard.

Fate of the ship

Why the Panamanian-registered *Lee Wang Zin* turned turtle may never be known. She may have strayed downwind off course and run up on Celestial Reef. The cargo may have been unbalanced or fluidized. There has been speculation of a catastrophic hull failure. The secret lies, after a remarkable upside-down voyage, in 181 fathoms of water.

Extensive search and rescue efforts by Canadian and U.S. Coast Guard (USCG) aircraft and vessels recovered only two bodies of the 30 Taiwanese crew members. Both were recovered several days later and appeared scantily prepared for abandoning ship, indicating an abrupt death blow to the vessel.

The *Lee Wang Zin* drifted northward 28 mi into U.S. waters and there, at daylight on December 27, was found aground off the Kendrick Islands on the southeast tip of the Prince of Wales Island, 30 mi south-southeast of Ketchikan. Waves of 15 to 20 ft crunched the vessel against the rocks and caused structural damage. Large oil sheens, over a 40-mi-long and 100-mi² area, were reported moving northward in gale winds and high seas.

On December 29, the weather calmed. At 10:00 a.m., Alaska State Troopers landed a helicopter on the overturned hull, still aground at Kendrick Islands. First Sergeant Rogers and Trooper Von Clasen hammered signals and listened with a stethoscope for response from survivors. Nothing was heard. About that time, Del Hansen, a local Ketchikan salvor, and two other divers explored

Introduction

During the early hours of Christmas morning 1979, the Canadian Bull Harbor Coast Guard Station, located at the north tip of Vancouver Island, B.C., monitored the last transmissions from the

Hansen reported, "There was no wheelhouse, the upper decks were all gone, and a good portion of the boiler room was opened up." The cargo compartments were empty and hatches swung with the current. The galley was intact and empty; staterooms were also empty. On the second dive, Hansen and crew noticed the ship was not hard aground at all but had moved. After concurrence from the Coast Guard, but before they and Navy divers could arrive, Hansen's 65-ft vessel, the 300-horsepower M/V *Alaska Salvor* had towed the 741-ft (less some crunched bow section) *Lee Wang Zin* away from the rocks. It was 1:30 p.m. The Coast Guard cutter *Laurel* arrived and put a line on Hansen's vessel and they towed in tandem. Hansen later passed the line to the *Laurel* and headed home. The *Lee Wang Zin* was to be towed to a deep (1,400-fathom) burial far offshore, but she did not get that far.

The Navy divers attached a new 10-in. line to the rudder post and the Coast Guard towed the *Lee Wang Zin*, upside down and backwards, for about 30 mi until on December 30, late in the afternoon, quite dark at this time of year, the tow parted. Commander Spoltman, Federal On-Scene Coordinator (FOSC), authorized the cutter *Munro* to sink the *Lee Wang Zin* if they could not recover the tow. Four hours and 16 rounds of 5-in. cannon fire later, the *Lee Wang Zin* defiantly floated on, upside down.

The next day, New Year's Eve, Hansen's salvors had torched keyholes in the bow of the *Lee Wang Zin* and secured chain and line to the tug *Salvage Chief* which took the *Lee Wang Zin*, upside down and forwards, under tow. The *Munro*, now with a demolition team and explosives aboard, was to accompany them to the planned sink site.

Some 50 mi early and with no warning, the *Lee Wang Zin* sank, stern down. "As soon as it started to sink, the winches started to back up," said Scott Hansen. "It burnt out the winch motor and started to tow the *Salvage Chief* back at 20 to 30 kt." When the ship settled to the bottom, 1,080 ft down in 55 seconds (12 kt downward), it left only 100 ft of towline on the spool. The *Lee Wang Zin* sunk 9 mi southwest of Petrel Island, a National Wildlife Refuge (with the largest and second largest breeding colonies of rhinoceros auklets, ancient murrelets, Leach's storm petrels, and fork tail petrels in Alaska), just before noon, January 1, 1980. Only a trace of oil surfaced at the sink site, but more than 2,381 bbl of bunker fuel remained near the 'grounding' site—Alaska's largest marine oil spill.

Fate of the oil

When first sighted by Canadian Coast Guard helicopter, the *Lee Wang Zin* was emitting large quantities of oil. Wind-driven currents carried this oil toward the northwest at a speed of about 1 kt. A day later at noon, Alaska State Troopers spotted the overturned vessel 1.5 mi due east of McLean Arm on Prince of Wales. About half of the hull was under water, with 12- to 15-ft waves breaking over it. No oil slick near the vessel was noted, possibly because of extreme roughness of the seas and heavy winds. But to the south on that same day, the Canadian Coast Guard reported an oil slick 2 by 10 mi. Very few aircraft were flying because of the southeast gale. Two were observed at the exposed bow; one was square, 4 ft on an edge, the other was a 6-ft gash. Oil streaked 18 mi to the north, estimated at 714 bbl.

Toward the end of the next day, December 27, an overflight by the Alaska Department of Environmental Conservation (DEC), Fish and Wildlife Service (F&WS), and National Oceanic and Atmospheric Administration-Hazardous Substances

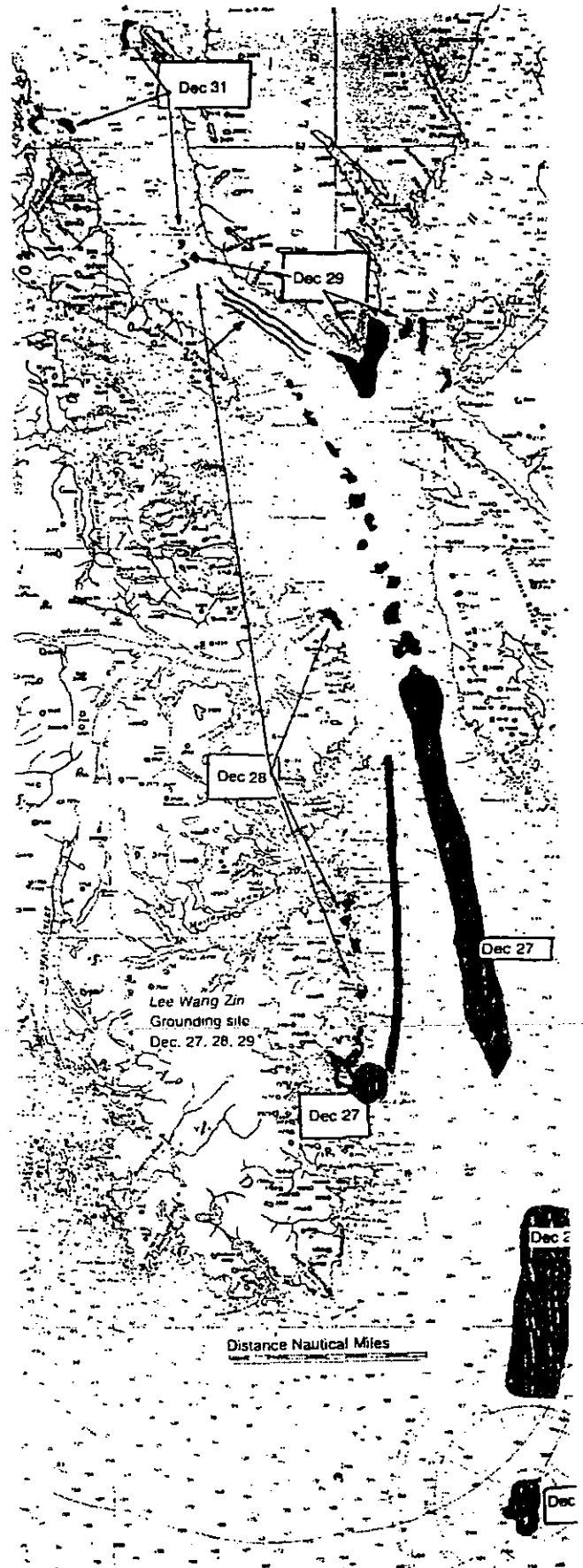


Figure 1. Oil movement from the *Lee Wang Zin*, December 1979

vessel leaking oil badly, with a 0.5-mi radius of oil around the grounded ship, and two large slicks going northward up Clarence Strait, extending 35 mi, as shown in Figure 1. Only one or two aircraft could fly on that Thursday. Later that night, winds gusted to 90 kt.

About 1:30 p.m. on December 28, winds remained from the southeast at 60 kt and had driven oil towards the east shore of Prince of Wales Island from the grounding site at Kendrick Bay north to Chasina Point, affecting shorelines for 23 mi (Figure 2). At exposed rocky headlands, oily foam was windbeaten into a froth. As it moved northward, oil could be seen collecting in bays and pockets protected from the southeast winds. On the other side of Clarence Strait, a large amount of oil could be seen from Helm Point north to Ship Island in three windrows paralleling the shore about a mile off. Several large pancakes, from 100 to 300 ft in diameter, could be seen as far north as Ship Island, more than 70 mi from the first Christmas day sighting and 70 hr after it.

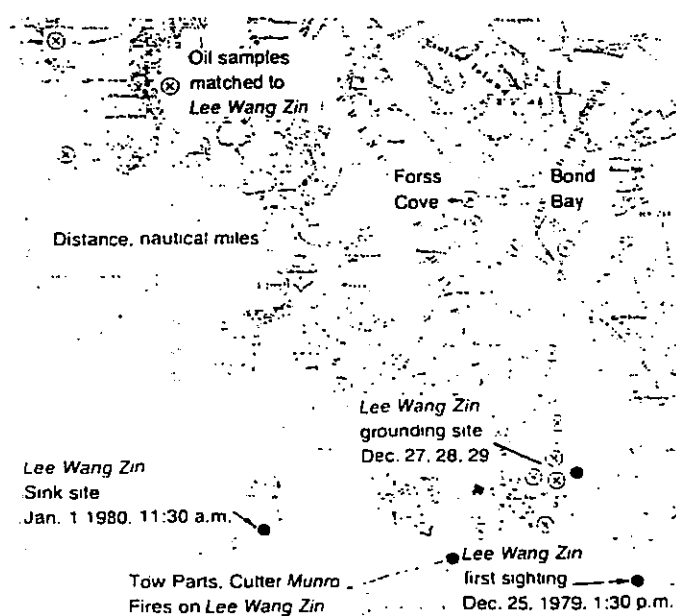


Figure 2. Locations of oil samples matching oil spilled from the *Lee Wang Zin*.

Before noon on December 29, Alaska State Troopers reported oil in the bays and estuaries from Kendrick Bay to Chokmondeley Sound. An oil slick was noted in the middle of Clarence Straits with ribbons of oil going toward Caamano Point, which had a significant amount of oil at the beach line, and a heavy concentration of oil was observed in Bond Bay. All of these are west of Helm Point. Two ribbons of oil appeared to be floating northeast in Behm Canal and a smaller slick appeared to be going in to the Clover Pass area. As the *Lee Wang Zin* was being towed southward on the afternoon of December 29, a trail of oil followed the ships. The oil, which had continued to leak from the vessel on December 27, 28, and 29, was nearly all blown into Kendrick Bay and attached to beached logs and rocky intertidal areas. The wind shifted on December 29 and much of the thick brown oil escaped from the calms of Kendrick Bay to be blown northward later.

On December 30 and 31, pancakes of oil were observed by DEC representatives near Thorne Bay, Narrow Point, and Meyers Chuck. Bob Meyers, whose grandfather named Meyers

along the tide rip, but when the wind changed to the north, it moved back out again. We were lucky." But overnight, that oil had disappeared, some of which was to be discovered the next summer.

Also on December 31, Alan Stein, a Petersburg gillnetter, observed a long broken oil slick snaking through the islands above Thorne Head, small circular slicks (2 to 8 ft) near Ship Island, an acre-sized slick off Windfall Harbor, and, off Tolstoi Point, "coffee-mug sized black globules spun streaks into a sheen. . . ."

How oil got to Port Alexander remains a mystery. Port Alexander is located 97 mi north of the sink site and, from the grounding site, the tortuous path up Clarence Strait would be 210 mi, north, west, south, and north. But on January 18 and 19, brown sticky oil washed onto the beaches of picturesque Port Alexander, 50 years ago a booming fishing village. Oil samples taken and analyzed by the DEC from there and the nearby Hazy Islands National Wildlife Refuge matched oil samples taken from Kendrick Bay.

After January 2, the free-floating oil was no longer commonly observed. The iridescent sheens, probably diesel oil or light fractions of the bunker oil, were no longer associated with the bunker oil which still remained. From that point onward, it became almost impossible to locate oiled beaches by aircraft, even by helicopters flying very, very low. Ground-based surveys, very inefficient, became necessary to find cleanup sites.

Although the Thorne Bay-Meyer Chuck pancakes had disappeared on the night of December 31, DEC observers insisted the oil had beached, despite the fact that several later aerial surveys found nothing. Later that summer, responding to a tip by a Thorne Bay beachlogger, DEC investigators finally found significant quantities of oil, fingerprinted as Kendrick Bay oil, in Forss Cove and Tolstoi Bay.

No significant quantities of oil were found inside Moira or Chokmondeley Sounds or in Helm Bay, all sensitive fishing areas. About 350 mi of shoreline was initially oiled, but about 80 percent of that was exposed rocky headlands, from which wave action would remove adhered oil—and relocate it downwind.

Once ashore, the oil remained beachfast, unless it was attached to debris that refloated. Most all beached oil was found from midtide up to high tide and some was reported windblown into shoreside spruce trees. Whenever oil came into contact with beached logs, very common in this area of logging activity, it adhered to the exposed wood. However, much of the oil also found its way into crevices between rocks of this very rocky and rough shoreline. Cleanup of oily logs would be easy compared with cleanup of oily crevices.

Resources affected

Southeast Alaska swarms with fantastic animal resources, varying with the season; therefore, the sensitivity of waterfowl, marine mammals, fish, and intertidal organisms, all abundant, was of great concern in the *Lee Wang Zin* oil spill. However, another unique dimension of oil effects on wildlife must be considered for spills on Alaska's winter coastline. Because of the intense snowfall (falling off your snowshoes may leave you in snow over your head), the intertidal zone supports all nonhibernating, nonmigrating animals in the winter. Even mountain goats and black-tailed deer consume kelp and salt grasses. Mink, martin, and land otters prowl among the intertidal rocks in search

of shellfish and for easier movement from place to place. Crows and gulls pry off barnacles and mussels. Shorebirds pick at snails. All winter life in Southeast Alaska is compressed into the intertidal zone, or just above it, and these are times of highest stress and mortality. Oiling of fur or feathers in winter months would destroy an animal's insulation and increase exposure to cold stress. Such an oiled animal would seek the warmth of shelter and such a hidden casualty would not be tallied in a "body count."

Ketchikan Department of Fish and Game (DF&G) biologist Don Kelly quickly advised the FOSC upon his December 27 arrival of the sensitive and critical fisheries and wildlife areas potentially affected: Helm Bay which supported important herring-spawning areas and wildlife habitat (a large saltmarsh) and Moira and Cholmondeley Sounds, which have 42 and 55 catalogued salmon-spawning streams, respectively (compared to 6 in Kendrick Bay). The Scientific Spill Coordinator, Burl Wescott, advised that these areas had only been "lightly impacted." Wescott also reported that acute toxic effects from the oil were not grossly evident because no clams, worms, and other invertebrate sea life were seen surfacing. At that time, the DF&G also advised the FOSC that Clarence Strait and Dixon Entrance, the route of the planned disposal site for the vessel, supported commercial bottomfish fisheries for halibut and blackcod.

DF&G biologists also report that *Lee Wang Zin* oil effects centered on chronic, low intensity impacts to waterfowl and furbearers, rather than mortalities of fish and shellfish. Birds were oiled and high percentages (86 percent in Kendrick Bay, 71 percent in Moira Sound, 67 percent in Bond Bay) of approximately 50 collected seabirds—grebes, murrelets, gulls, cormorants, murres—goldeneye, bufflehead—have shown some signs of oiling. Reports to DF&G from trappers in the Etolin-Onslow Islands indicated that trapped otter showed signs of oil. DF&G biologists feared that these impacts were likely to continue throughout the summer, as it appeared the oil-weathering rate was very slow.

Alaska Department of Environmental Conservation personnel (DEC) observed an oiled grebe unable to fly amid oiled logs in Bond Bay on December 30, and also observed a mink attempting to prey on that grebe. An oiled duck and oiled sandpiper were also sighted at that time, but they were still able to fly. DEC ecologists at Kendrick Bay agreed that no gross signs of acute toxic effects were evident. Limpets were well attached and easily pushing the oil ahead of them as they grazed. Mussels, snails, and barnacles not covered by oil seemed viable. Life directly under oil patches was dead. One cormorant and one heron were observed oiled and in bad condition. The DEC ecologists feared that there would be potential for additional exposures in the weeks and months ahead that would increase the probability of adverse effects on spring sets of barnacles and mussels, maturing intertidal algae, and northbound migrating waterfowl.

The F&WS advised that bald eagle nests averaged about one per linear mile of shoreline in the oil-impacted area and many eagles were observed during the months of January and February. Major impacts were thought to be directed at furbearers and waterfowl, especially with the nesting period occurring in the following months when oil on the eggs could cause mortality. Dr. Pat Wennkens, F&WS Pollution Control Coordinator stated, "The main danger of tar balls is to birds and small mammals."

The Ketchikan Indian Corporation expressed concern over the *Lee Wang Zin* oil. Director Ed Thomas noted that "many of the

native foods—and other people's foods, too—comes from tidal zones. Oil was spilled in some key areas such as Dall and Caamano Point. . .". Dall Head is probably the collection spot closest and most used by Ketchikan Indians for musseled other organisms. Thomas also expressed fear that there was danger to mink, martin, and otter.

The oil cleanup crews reported various oiled waterfowl in Kendrick Bay. David Wieler, a microbiologist hired on as a laborer, collected and tried to care for an oiled loon, which apparently died of exposure.

John Glude, an aquaculture consultant hired by a law firm representing the insurer of the *Lee Wang Zin*, investigated affected areas from December 30 to January 4. Glude dug beneath the oil on the Bond Bay beaches and found a few live clams (*protethaca* and *saxidomus*) and very little oil penetration into the sand. At Cabin Cove, just west of Bond Bay, Glude found oiled marsh grass, again little oil penetration into the sand. In Moira Sound, Glude found no salmon eggs in the two intertidal spawning areas tested. In Kendrick Bay, eggs were found in three spawning stream intertidal areas. Glude agreed with other biologists and observers that there was little immediate damage or mortality to intertidal marine species due to subtidal invertebrates or fishes. He did differ from other biologists and observers in that he thought that the oil weathered rapidly. Glude made no reference to furbearer waterfowl.

In Port Alexander, a dead puffin washed ashore amid oil from the *Lee Wang Zin*. DEC field officers also took possession of an oiled bald eagle which flew as a seat passenger to Sitka where veterinarian Burgess Bauder treated the eagle, which recovered and was released.

Cleanup

On the evening of December 26, lawyers representing owners of the *Lee Wang Zin* advised the Federal On-Scene Command (FOSC) that they would not assume responsibility for oil spill cleanup, so at 6:30 p.m. the FOSC assumed that responsibility on behalf of the Federal Government. On December 28, the FOSC requested a representative from Crowley Environmental Services (CES), an Anchorage-based oil spill cleanup firm, to meet him in Ketchikan and on December 29, CES was contracted to engage in cleanup. On that afternoon, Coast Guard personnel from the Cutter *Cape Roman* began cleanup of oil at Caamano Point/Bond Bay, where it was 10 in. deep in many spots, and the next 2 days, 25 USCG personnel had picked up 35.7 bbl of oil.

CES crews joined in cleanup at the Caamano Point/Bond Bay area on January 2, and started cleanup in the Kendrick Bay area on January 3. At Caamano Point/Bond Bay, oiled logs on the beach were transported very effectively by helicopter to DEC approved burning sites, one large log being airlifted every minute. Beached logs were stacked up like jackstraws 10 to 20 ft deep. From this time on, oil cleanup was measured in terms of cords of oil-soaked wood burned. In Kendrick Bay, the coastline was so rugged that no upland site for burning could be found, and the burning sites flooded at high tide. Log booms were effective in Kendrick Bay. However in Caamano Point/Bond Bay, sorben and curtain-type booms would be destroyed by large floating logs. Heavy snow hindered log-moving operations and aircraft support for days at a time. Winds would be at gale force in one area while it was sunny shirt-sleeve weather in another area.

Several times it was cold enough to freeze a glaze of ice on the intertidal zone that lasted through several tidal cycles. Once a storm had passed, a pocket previously cleaned up would be reoiled by oil broken free by wave action upwind. Since the pattern of storms moved northward, the southernmost areas were cleaned first and once this procedure had been established, progress was made.

In southeast Alaska there are no roads, which limited logistics and severely limited cleanup efforts. At Caamano Point/Bond Bay, cleanup crews commuted daily by boat from Ketchikan, weather permitting (somewhat more than 50 percent of the time). At Kendrick Bay, cleanup crews slept on fishing boats or in an abandoned mining camp until a dormitory barge was found. Living conditions were very unpleasant. The oil adhered to rainsuits, boots, skin, and hair; few showers were available; and the oil seemed to permeate into sleeping bags and food. Boat and aircraft access was much more difficult here than to Bond Bay.

At Cabin Cove west of Bond Bay, oiled marsh grass was mowed (using a standard lawn mower owned by a Ketchikan USCG officer), heaped, and burned, with varying degrees of success. At Kendrick Bay, hydroblasting of oil attached to intertidal rocks successfully removed barnacles, limpets, mussels, and algae, but much of the oil remained. At Meyers Chuck, some more oil drifted in between the dock pilings and was cleaned up by a CES crew once weather allowed flying, on January 24. At Rip Point, oil cleanup was complicated by abandoned cylinders of explosive and dangerous gases (acetylene, chlorine, LPG, oxygen, etc.) strewn about after a barge grounding.

U.S. Forest Service biologists and helicopters supported F&WS surveillance of oily beaches and of wildlife-sensitive areas. The DF&G research vessel *Sundance* assisted DEC ecologists and DF&G game biologists in monitoring and waterfowl/furbearer sensitivity studies. The SSC refereed and relayed information and needs back and forth to the FOSC. The Pacific Strike Team assisted the FOSC with technical cleanup and bookkeeping activities. The FOSC would not consider cleanup of a particular site to be complete until the DEC representative and the SSC had concurred.

Consultants and lawyers representing the owners of the *Lee Wang Zin*, while not admitting any responsibility, advised the FOSC on January 4 that cleanup of oil at Caamano Point/Bond Bay would only have cosmetic value and that cleanup activities should be terminated. On January 18, they again advised that cleanup cease in Caamano Point/Bond Bay and also in Kendrick Bay. There were, they claimed, no toxic effects on tidal and subtidal organisms.

About that time, oil washed into Port Alexander. Residents had difficulty notifying USCG or DEC representatives and began cleanup operations themselves. According to statements of A. Taft Perry, acting mayor, and others, about a dozen irate people picked up and burned oily debris, estimated at several hundred gallons. By the time the weather had improved, and the first DEC field officers arrived on the scene, the cleanup was nearly complete.

Nevertheless, cleanup continued at Kendrick Bay until February 15 and at Caamano Point until April 25. About 24,580 gallons of oil were removed at a cost of \$2,238,000 (\$85 per gallon). This includes 2,660 cords of oil-soaked wood which were burned. Various objections were raised that not enough was done. Michele Zerbetz, Executive Director of the Southeast Alaska Seine Boat Owners and Operators, wrote on April 9, 1980, "While I can sympathize with the financial problems involved in the cleanup

activities, I cannot ignore, and the United States Coast Guard shouldn't either, that a lot of oil remains on the beaches." Zerbetz expressed disappointment in the attitude present at the Regional Response Team meeting on March 12 and predicted worsening problems in the summer fishing season. DF&G Ketchikan biologists predicted reports of oiled beaches and logs all summer, and suggested that storms would relocate oil and recontaminate beaches, and recommended that the cleanup not be declared closed.

Postcleanup activities

All involved federal and state agencies agreed that the April 25th completion of cleanup at Caamano Point would have meant removal of all the oil that it was practical to clean up and that was known about at the time. But oil at Thorne Bay/Tolstoi Bay had not yet been rediscovered and the final resting places of some oil patches in the Behm Canal/Clover Pass area have yet to be found. During periods of extreme tides in July and August, DEC field officers and ecologists and USCG Ketchikan personnel found thick oil deposits on beaches of Forss Cove and Tolstoi Bay and Tolstoi Point. Fingerprinting by the DEC lab showed this oil matched that of Kendrick Bay. The oil showed remarkably little weathering with few chemical changes and only a thin layer of organic debris attached to the outer layers. Beneath that paper-thin layer, the oil looked as fresh as it had looked in January. Bear signs were noted in the area and several deer footprints were photographed in oil patches. The heaviest oil blobs were adjacent to a trap line. At that time, the cleanup areas at Caamano Point/Bond Bay and Kendrick Bay were resurveyed. The Regional Response Team (RRT) was advised of these findings.

Later, consultant John Glude, accompanied by DEC, also revisited and resurveyed his study areas and the cleanup areas and surveyed the newly found oiled beaches at Forss Cove and Tolstoi Bay. Glude recommended that the areas be dedicated to scientific studies. Also NOAA's Paul Becker, of the RRT Damage Assessment Committee, and Dr. Chuck O'Clair of NOAA Auke Bay Lab visited and surveyed the Forss Cove and Tolstoi Bay oiled beaches. They made recommendations that studies and cleanup be conducted and that some sensitive grassy areas be left undisturbed. The SSC Burl Wescott and new FOSC Commander Jacoby likewise looked over the Forss Cove oil. After reviewing recommendations of Forss Cove visitors and concurrence with the FOSC, the DEC decided to perform some monitoring and experimental onsite oil-burning techniques. The RRT was so advised.

From October 7 to October 18, 1980, DEC personnel worked at the south stream in Forss Cove and set up comparison study sites. Oily gravel, seaweed, grass, and other oily debris were carefully removed by hand in the two areas adjacent to two control areas.

Oily debris was burned in 55-gal drums modified with a grate supported about two-thirds from the bottom and with several large ports for underdraft. Heavy-duty propane-fired torches ("weed burners") assisted tremendously in combustion. Belching blue flames from the torches were directed at the oily debris from below the grate or downward from above, or both. Some bunker oil dripped through the grate along with inorganics, sand, and gravel. The oil that dripped through could be partly burned by directing the torch blast at the bottom of the drum. Several extra replacement grates were needed as grates became clogged with rocks and required cleaning. Much of the oily organic debris was incinerated on the grate. The residue, which varied from burn to burn, was about two-thirds completely dry and inorganic and could be rolled

around in the palm of the hand with no hint of oil, and the other one-third was noticeably tarry, but certainly with less oil and less volume than what went into the burn barrel. Because this oily debris contained much of the hardest-to-burn material (oily gravel), the success was very encouraging. Some of the results are tabulated below.

Area cleared, ft ²	Time required, man-hours	Oily debris volume, gal	Removed weight, lb	Percentage of oil
2,157	25.5	261	3,176	25

Results of burn barrels experiment (based on two bbl in operation)

Oil debris		
Input	Output	Reduction, %
3,176 lb	2,077 lb	35
5% oil (wt)	1% oil (wt)	80
261 gal	164 gal	37

Burning time: 14 hours

Man-hours: 38

Propane used: 430 lb (\$155)

Cost of barrels, grate, welding:

\$150

Cost of torches (3):

\$130

Total time (including cooldown: 3 days

Cost (excluding transportation to scene and including materials and labor for pickup and burning):

\$8/gal oil debris

Cost (including above and transportation plus 5 days' food and boat charter):

\$19/gal oil debris

Study and control sites were surveyed and samples taken for weathering-rate studies. Forss Cove will be monitored for the next several years and similar studies may be considered next summer for other oiled beaches in Forss Cove and Tolstoi Bay.

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NOAA Response Report

Barge Annahootz
Wrangell Narrows, Alaska
April 7, 1986

Skip Fox, Scientific Support Coordinator

INCIDENT SUMMARY

At approximately 1720 on April 7, 1986, the tanker Roughneck was reported to have run her tow, the barge Annahootz, aground in Wrangell Narrows, Alaska, off Vixen Point. The barge carried a mixed bulk oil cargo of approximately 480,000 gallons, with 90,000 gallons of diesel thought to be lost.

NOAA RESPONSE

NOAA/OAD was notified of the incident at 2000 on April 7, 1986, by the U.S. Coast Guard Marine Safety Office, Juneau, and requested to provide a trajectory prediction and an analysis of resources at risk in the area around Wrangell Narrows.

With the on-scene weather conditions of 35 knot winds expected to decrease to 20-25 knots, NOAA predicted that the spilled product could travel north 10-12 miles towards Petersburg on the flood tide, and four miles to the south on the ebb tide. A rainbow to silver sheen would heavily spatter the shoreline in those areas. NOAA also advised that up to 80% of the product could be dispersed within two to three miles of the spill site, given the weather and currents in the area. If this was the case, the diesel fuel would be picked up by kelp and absorbed into the sediment, where it could inflict a high mortality on the sea grasses and fauna present along the shoreline.

FINAL DISPOSITION OF THE INCIDENT

The Coast Guard cutter Cape Hatteras was on scene the night of April 7, but was unable to discern any slick due, in part, to poor visibility. At first light on April 8, the Coast Guard Marine Safety Division, Ketchikan, conducted an overflight of the area north and south of the grounding and found no visible signs of the spill. No impacts were observed. The barge was surveyed, soft-patched, and sent on to Sitka to offload its bulk oil products.

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NOAA Response Report

T/V Roughneck - Barge Annahootz
Sergius Narrows, Alaska
April 11, 1986

Skip Fox, Scientific Support Coordinator

INCIDENT SUMMARY

At 1310 on April 11, 1986, the tanker Roughneck, carrying approximately 8,000 gallons of diesel fuel with the tank barge Annahootz in tow, was preparing to enter Sergius Narrows en route to Sitka when the tug and barge collided, sinking the tug and running the Annahootz aground on the rocks just above the Narrows. The Annahootz, which had an estimated 460,000 gallons of mixed cargo on board, as well as damage to her number 2 starboard cargo tank from a grounding in Wrangell Narrows four days earlier, was still attached to the tug by the towing bridle. Three persons were rescued, but two persons were reported missing.

NOAA RESPONSE

NOAA/OAD was notified of the incident at 1405 on April 11, 1986, by the U.S. Coast Guard District 17, and requested to provide an analysis of the probable trajectory of the diesel on board the tug and the mixed product on board the barge, and advise on possible impacts on the environment around Sergius Narrows.

NOAA advised that the strong four- to eight-knot currents in the area would cause the diesel, as well as the other petroleum products on board the barge to disperse rapidly, with the slight chance of some trapping in the bays and coves to the south of Sergius Narrows. NOAA further warned the Coast Guard that the refined products could have an acute impact on the local sea grasses, fish, and waterfowl in the area north to Yellow Point, around Launch Cove, Sulioia Bay and south to Louise Cove.

FINAL DISPOSITION OF THE INCIDENT

Although a light sheen was visibly leaking from the sunken tug for a day after the incident, it was not recoverable due to the strong currents in the vicinity of the incident. The Annahootz was refloated and moved to Sitka where it offloaded its bulk oil cargo and underwent inspection before being allowed to return to Seattle for repairs. The two missing crew members were never located. The case is still pending.

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NOAA Response Report

M/V Vashon
Johnson Cove
Prince of Wales Island, Alaska
June 7, 1986

John Whitney and Skip Fox, Scientific Support Coordinators

INCIDENT SUMMARY

At approximately 2000 on June 6, 1986, the U.S. Coast Guard Marine Safety Office (MSO) in Ketchikan was notified that the M/V Vashon, a former Washington State ferry listed on the National Register of Historic Places, had run aground approximately four hours earlier at the head of Johnson Cove on Prince of Wales Island. The vessel carried 6,500 gallons of diesel in three independent steel fuel tanks, 300 gallons of diesel in a lube oil tank, ten drums of gasoline, two drums of lube oil, and one drum of kerosene.

NOAA RESPONSE

NOAA/OAD was notified of the incident at 0020 on June 7, 1986, by Coast Guard District 17, and requested to provide trajectory information and cleanup and containment recommendations. NOAA advised that the major concern for environmental damage was the discharge of gasoline from the drums and its ensuing toxicity to salmon fry and other organisms in the water. As a result, NOAA recommended deployment of booms and sorbents across the mouth of Johnson Creek and around the vessel. Due to the natural dispersing characteristics of diesel and the flushing action of fjords like Johnson Cove, NOAA advised that any product escaping the immediate vicinity of the vessel was dissipate shortly. Throughout the incident, NOAA maintained contact with the Alaska Departments of Environmental Conservation (ADEC) and Fish and Game.

FINAL DISPOSITION OF THE INCIDENT

By June 8, the ferry owner had accepted responsibility for any ensuing spill. The Coast Guard On-Scene Coordinator opened the Federal pollution fund, activated the Regional Response Team, and requested technical assistance from the Coast Guard Pacific Strike Team. Sorbent boom, harbor boom, sorbents, and a log boom were deployed around the vessel and across the mouth of nearby Johnson Creek. Arrangements were made to offload the diesel from the vessel's tanks and, on June 12, tank trucks aboard a barge pumped out approximately 1,500 gallons of diesel. By then, however, the 30-degree listing of the vessel had caused its tanks to rupture, disgoring an estimated 5,200 gallons of oil into Johnson Cove.

Although escaping petroleum resulted in a sheen over a large part of Johnson Cove and continued into Moira Sound, a considerable amount of oil was captured by the sorbents, which were burned onshore. The burning was approved and supervised by ADEC. The owner's crew remained on-scene through the middle of July to monitor boom and collect oily debris and sorbent for burning. The main mid-July sockeye salmon run into Johnson Cove and up Johnson Creek was minimally affected. When the case was closed by the Coast Guard on July 24, 1986, no further pollution was occurring, and the owner was still attempting to salvage and refloat the Vashon.

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NOAA Response Report

M/V North Star
San Alberto Bay, Prince of Wales Island, Alaska
August 8, 1986

John Whitney, Scientific Support Coordinator

INCIDENT SUMMARY

At approximately 1000 on August 8, 1986, the U.S. Coast Guard Marine Safety Office (MSO) in Juneau, Alaska, was notified that the cruise ship North Star, carrying approximately 25,000 gallons of diesel fuel, had run aground on a rock in the middle of San Alberto Bay at 0930 at the low tide level. The grounding holed the vessel and caused an approximate 22-degree list, but the fuel tanks were not penetrated. Resulting flooding of the engine room caused a minor release of bilge slop and engine oil. The 200 passengers and crew aboard the vessel at the time of the incident were taken ashore via local boats.

NOAA RESPONSE

NOAA/OAD was notified of the incident at 1300 on August 8, 1986, by the Coast Guard MSO, Juneau, and requested to provide trajectory information, weathering and toxicity characteristics of diesel, and biological vulnerability should a major spill result.

NOAA advised that, during the flood tide, currents would travel north and northwest through San Christoval Channel and southward during ebb tide, with a maximum speed of approximately two knots and a tidal excursion range of about 6 miles. It was further related that diesel is fairly toxic and, on its initial grounding, would probably be lethal to a number of beach organisms but would disperse rapidly in the water.

The Coast Guard was also informed that San Alberto Bay, which is approximately five miles in diameter, is extremely rich and biologically diverse. All elements of the marine food chain are present, from plentiful eel grass and kelp beds through clams, shellfish, crabs, mollusks, and juvenile and schooling salmon.

FINAL DISPOSITION OF THE INCIDENT

The Coast Guard Pacific Strike Team arrived on-scene by the evening of August 8 with large capacity pumps and a high-seas boom. Divers worked through the evening and night to repair the holes in the hull. Pumps from the vessel, augmented by those brought by the Pacific Strike Team, attempted to remove water from the hull of the vessel. During the second high tide after the grounding, out-pumping of the M/V North Star was adequate enough to float it off the rocks. The vessel moved into the local village of Klawock for continued dewatering. Only a minimal release of petroleum occurred. The weather was calm throughout the incident, and a lighted buoy marked the rock where the North Star ran aground. The Coast Guard closed the case on August 12, 1986.

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NOAA Response Report

T/V Stuyvesant
Gulf of Alaska to Baja California
January 12, 1987

Stewart McGee, Jr., and John Whitney, Scientific Support Coordinators

INCIDENT SUMMARY

Between January 6 and January 12, the Standard Oil tanker, Stuyvesant, lost approximately 15,000 barrels of North Slope crude en route from Alaska to the Panama Canal Zone. During this period, the vessel had moved from a position approximately 300 miles west of Sitka, Alaska, to about 120 miles offshore central California.

The vessel had departed from Valdez at 0805 on January 6 and encountered severe weather from noon on January 7 through January 12. On January 9, the vessel was observed to be listing to starboard. Weather conditions prohibited tank soundings until three days later, at which time it was confirmed that the port wing tank had lost roughly 15,000 barrels of oil.

At 1300 on January 12, the U. S. Coast Guard Marine Safety Office, Alameda, California was notified by the Coast Guard Captains of the Port in Seattle and Anchorage of the incident.

NOAA RESPONSE

NOAA/OAD was notified of the incident on January 12, 1987 by the Coast Guard Marine Safety Office, Alameda, and requested to provide hindcast trajectories to ascertain whether the approximately one dozen oiled marine birds which had come ashore off San Francisco had been oiled by the Stuyvesant. The U.S. Fish and Wildlife Service, California Department of Fish and Game, and various other governmental and private agencies were notified because of concern for the humpback whale migration and the 100,000 plus overwintering seabirds that transit the area.

NOAA advised that, if the oil had been spilled before January 10, it would have been exposed to approximately three major storms, causing the oil to break up and disperse over a three-day period. However, if the spill occurred on or after January 12, small globules of oil and iridescent sheen could conceivably be spotted from an aircraft. However, the oil would have been too far offshore to cause the oiling of the seabirds.

General information and trajectory information responses were also provided to Coast Guard District 17 Headquarters in Anchorage, the Bureau of Land Management's Minerals Management Service, the U.S. Fish and Wildlife Service, and the Alaska Department of Fish and Game.

FINAL DISPOSITION OF THE INCIDENT

The Coast Guard sent out two surveillance flights to attempt to locate the oil. The flights flew the entire trackline of the Stuyvesant from its origin out of Prince William Sound to offshore California. No evidence of the 15,000 barrels of North Slope crude was detected. The case was closed by the Coast Guard on January 20, 1987.

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NOAA Response Report

T/B Callapooya
Hydaburg, Prince of Wales Island, Alaska
February 26, 1987

John Whitney, Scientific Support Coordinator

INCIDENT SUMMARY

Late in the evening of February 25, 1987, the T/B Callapooya, en route to Craig, Alaska from Hydaburg, Alaska, grounded in the Sukkwan Narrows across from Hydaburg. The grounding ruptured the number 1 starboard tank, releasing approximately 9,000 gallons of number 2 diesel, from a total tankage of 289,000 gallons. The spill occurred on a rising tide and was initially carried north by the strong tidal current action. On the reversing tidal current, the diesel was carried directly over rich subsistence clam beds just offshore from Hydaburg. The clam beds are the source of cockles, butter, horse, double-neck and razor clams. Eventually, the current carried a sheen 6-7 miles southeast into Hetta Inlet. The barge was owned by Halverson Towing, who assumed full responsibility for any clean-up operations.

NOAA RESPONSE

NOAA/OAD was notified of the incident at approximately 1000 on February 26, 1987, by the U.S. Coast Guard Marine Safety Detachment (MSD) in Ketchikan, and requested to provide a trajectory for the spill and to analyze resources at risk.

NOAA advised the Coast Guard that a definite sheen could be expected; however, this sheen would rapidly disperse and feather out, with this behavior being accentuated by tidal current and wind conditions. As the tide fell, small but noticeable "bathtub rings" would occur on the shoreline and associated rocks. However, these marks would probably wash off after a few tidal cycles.

The diesel spill would have little effect on natural resources because few fish and sea birds are in the area at this time of the year. However, there was some possibility that ingestion of oil and subsequent short-term tainting of the subsistence clams may occur. Nevertheless, the strong currents in Sukkwan Narrows would reduce the exposure time and rapidly dilute the diesel; this is not the reproductive time of year when the new clams would be in the water column; and clams tend to cleanse themselves of foreign substances within days or weeks, depending on the amount ingested. Close communications were maintained with the Alaska Department of Environmental Conservation (ADEC) throughout the incident.

FINAL DISPOSITION OF THE INCIDENT

The Coast Guard On-Scene Coordinator directed the Callapooya southeast to Hetta Inlet where the number 1 starboard tank was pumped into the number 4 tank. A tank barge was dispatched from Ketchikan to further offload oil from the damaged barge. Heightened concern by the people in Hydaburg over the oiled clam beds invoked an on-scene show by personnel from the ADEC. ADEC took several sediment samples on the oiled clam beach to measure the amount of oil incorporated into the sediments. ADEC issued an advisory that no one should eat the

clams until the results of the sample analysis had been received. The oil was allowed to dissipate naturally and the case was closed on March 2, 1987.

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NOAA Response Report

M/V Honan Ace
Prince of Wales Island, Alaska
April 15, 1987

John Whitney, Scientific Support Coordinator

INCIDENT SUMMARY

At approximately 1500 on April 15, 1987, the Honan Ace, a 570-foot Japanese log freighter carrying 300,000 gallons of bunker fuel, was blown onto the rocks at Dora Bay on the east side of Prince of Wales Island, Alaska. Gale winds of 60-80 knots broke the mooring buoy and pushed the stern onto a rocky shoal in the intertidal zone, while two tugs held the bow into the wind.

NOAA RESPONSE

NOAA/OAD was notified of the incident at 1700 on April 15, 1987, by the U.S. Coast Guard Marine Safety Office, Juneau, and requested to provide a resources-at-risk appraisal should a release occur. NOAA contacted the National Weather Service and learned that high winds would probably continue throughout the night and next day, making any kind of an effective response extremely difficult. Consultation with the U.S. Fish and Wildlife Service and the Alaska Department of Fish and Game revealed minimal resources at risk.

FINAL DISPOSITION OF THE INCIDENT

On the next high tide, the vessel refloated and was easily towed away from the rocky shoreline. The vessel's bottom had a 30-foot dent and a 12-foot gash which was six inches wide at the widest point. The double-bottomed hull prevented a major pollution incident; only a slight ribbon of a sheen was observed. The log cargo was offloaded at Dora Bay, and pumps were obtained from Seattle to pump out the bunker. The vessel retreated to Ketchikan where damage to the hull was evaluated. The case was closed on April 21, 1987.

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NOAA Response Report

P/C Kathryn M
Cape Spencer, Cross Sound, Alaska
June 3, 1987

John W. Whitney, Scientific Support Coordinator

INCIDENT SUMMARY

On May 31, 1987, the 32-foot *P/C Kathryn M* grounded on a sandy beach at Cape Spencer in Southeast Alaska (58°29.9'N, 137°20'W). The vessel had two drums of gasoline on its stern and 30 gallons of gasoline in its fuel tank. A 1030 U.S. Coast Guard helicopter overflight on June 2 confirmed that the vessel was hard aground and that no fuel had been released.

NOAA RESPONSE

At 1000 on June 3, 1987 the Coast Guard Marine Safety Office Juneau called the Anchorage NOAA Hazardous Materials Response Branch office and notified the SSC of the incident. The Coast Guard specifically requested information on the environmental consequences if the 130 gallons of gasoline was released in the environment. NOAA consulted Paynel's open-ocean weathering model and informed the Coast Guard that 90% of a sudden release of gasoline would probably evaporate within 12 hours. As a result, the environmental consequences of any form of release would be minimal.

FINAL DISPOSITION OF THE INCIDENT

The Coast Guard located a pilot in Yakutat who was willing to fly down to Cape Spencer and remove the two drums onto the beach. The case was closed on June 4, 1987.

NOAA Response Report

M/V Princess Kathleen
Juneau, Alaska
September 10, 1987

John Whitney, Scientific Support Coordinator

INCIDENT SUMMARY

On September 9, 1987, the U.S. Coast Guard Marine Safety Office (MSO) in Juneau, Alaska was notified that a local diver's had been heavily coated with oil after investigating the sunken wreckage of the M/V Princess Kathleen. The Princess Kathleen, a 350-foot cruise ship, sank in 1952 off Lena Point, approximately 10 miles northwest of Juneau. Although the diver saw no oil, it was rumored that there could still be as much as 80,000 gallons of oil aboard the vessel.

NOAA RESPONSE

NOAA/OAD was notified of the incident at 1000 on September 10, 1987, by the Coast Guard MSO, Juneau, and asked to stand by for further trajectory and resources-at-risk information.

NOAA advised the Coast Guard that the Princess Kathleen has become both a common diving target and an excellent fish habitat.

FINAL DISPOSITION OF THE INCIDENT

The Coast Guard MSO, Juneau, will be conducting investigations on this case for the next several months.

BIBLIOGRAPHY

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Thorsteinson, Lyman, National Oceanic and Atmospheric Administration Outer Continental Shelf Environmental Assessment Program, Anchorage, personal communication, September 10, 1987.

Anchorage

T/V STUYVESANT
Gulf of Alaska Off Dixon Entrance
October 6, 1987

John Whitney, Scientific Support Coordinator

Incident Summary

On October 2, 1987, the tanker STUYVESANT departed from the Valdez terminal, en route to Panama, with 1,500,000 barrels of North Slope crude on board. The vessel encountered severe storms during October 3-5 while approximately 200 miles offshore of Prince of Wales and Queen Charlotte Islands.

At approximately 1500 on October 6, the U.S. Coast Guard Marine Safety Office (MSO), Juneau, was notified that a leak had been detected in one of the STUYVESANT's starboard tank on October 4. The leak was believed to have stopped on the evening of October 6 when the vessel was approximately 200 miles offshore the Columbia River mouth. However, Coast Guard overflights identified oil slicks off the Washington/ Oregon coast and off Dixon Entrance. A total of 600,000 gallons of North Slope crude is believed to have been lost between October 4 and October 6.

NOAA Response

NOAA/OMA was notified of the incident at approximately 2000 on October 6, 1987, by the Coast Guard MSO, Juneau, and asked to provide trajectory information to direct Coast Guard search aircraft looking for the oil. Over the next week, regular communication was maintained between NOAA and the Coast Guard as trajectory, weather, oil sightings, and oil fate information was passed.

The Master of the STUYVESANT reported their position to the various Coast Guard Captains of the Port, including Alameda, California (the vessel entered Northern California waters on October 9), along their trackline from the Gulf of Alaska to Panama.

On October 9, NOAA advised the Coast Guard Marine Safety Office, Alameda, to focus on areas 30 to 50 nautical

T/V STUYVESANT
Gulf of Alaska Off Dixon Entrance
October 6, 1987

NOAA Response,
cont.

Conclusion

Contacts

Anchorage

miles south-southwest of the October 7 oil sightings because oil north of those sightings would have moved in a northerly direction. Further, the small, scattered patches of oil would continue to disperse and break apart due to sea conditions and the evaporation rates of North Slope crude. Those patches were not expected to be observable as coherent patches after another 24 hours.

At all times, the oil slicks remained far offshore. Due to winds, high sea states, and other natural processes, the oil dissipated naturally. No evidence of a slick could be located on a Coast Guard overflight on October 12. The case was closed on October 14. The STUYVESANT arrived in Panama on October 19.

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Truit, Jim, National Weather Service, Juneau, Alaska, personal communication, October 8-11, 1987.

T/V STUYVESANT
Gulf of Alaska Off Dixon Entrance
October 6, 1987

Contacts,
cont.

Anchorage

Watabayashi, Glen, National Oceanic and Atmospheric
Administration, Seattle, personal communication, October 6-
11, 1987.

Anchorage

Waterfront Dock Facility
Juneau, Alaska
October 8, 1987

John Whitney, Scientific Support Coordinator

Incident Summary

At approximately 0500 on October 8, 1987, a 6,600-pound tank of propane gas began leaking on a Juneau waterfront warehouse dock fronting Gastineau Channel. The U.S. Coast Guard and the Juneau Fire Department immediately established water-side and land-side safety zones.

NOAA Response

NOAA/OMA was notified of the incident at approximately 0900 on October 8, 1987, by the Coast Guard Marine Safety Office, Juneau, and asked to advise on the best methods for dealing with the release. The NOAA Scientific Support Coordinator (SSC) was also informed that an estimated 25% of the propane had escaped between 0500 and 0900.

NOAA advised the Coast Guard that propane vapor is extremely flammable and all ignition sources in the immediate area should be shut down with restricted access. In addition, the lower explosive limit for propane is around 20,000 parts per million, a concentration which would extend out about 30 to 50 yards. Propane vapor is heavier than air and would seek the lowest elevations and low-lying enclosures. Finally, the propane would probably dissipate rapidly as the day warmed.

Conclusion

The leaking valve was secured at 0954. The fire department used water jets to herd the propane vapor off the dock and onto the water surface, where no vessels or sources of ignition existed, and where the Coast Guard was maintaining a half-mile safety zone. The case was closed on October 8, 1987..

Waterfront Dock Facility
Juneau, Alaska
October 8, 1987

References

Anchorage

Harris, Lori, et al. 1987. The CAMEO Manual. Seattle: Ocean Assessments Division, NOAA.

Kummerlowe, David, National Oceanic and Atmospheric Administration, Seattle, personal communication, October 8, 1987.

Truit, Jim, National Weather Service, Juneau, Alaska, personal communication, October 8, 1987.

Anchorage

T/B SEASPAN 824
Wrangell Narrows, Alaska
October 27, 1987

John Whitney, Scientific Support Coordinator

Incident Summary

Early on October 27, 1987, the tank barge SEASPAN 824, loaded with number 2 diesel, grounded in Wrangell Narrows in the vicinity of Battery Islets. When the barge refloated at 0400 and moved north through Wrangell Narrows, approximately 10,000 gallons of diesel were missing.

At 0610, the SEASPAN 824 was tied to a log boom approximately three miles south of the town of Petersburg. U.S. Coast Guard Marine Safety Detachment, Ketchikan, and Alaska Department of Environmental Conservation (ADEC) personnel made overflights of the Narrows. The Coast Guard completed inspection of the barge by 1200 and determined that 16,500 gallons of diesel were missing.

NOAA Response

NOAA/OMA was notified of the incident at approximately 1000 on October 27, 1987, by the Coast Guard Marine Safety Office, Juneau, and asked to provide information on the expected trajectory of the spilled oil and an analysis of environmental resources at risk from the spill.

NOAA advised the Coast Guard that Blind Slough, an Alaska state bird sanctuary, was near the middle of Wrangell Narrows. The sanctuary is a habitat for significant numbers of geese, ducks, and other over-wintering waterfowl. NOAA recommended that every precaution should be taken to protect this area. High concentrations of crabbing activity adjacent to Blind Slough were noted, but would probably not be affected.

Due to the fast currents through the Narrows, the spilled diesel would rapidly disperse and break up, possibly leaving "bathtub rings" on the shoreline on a falling tide. After a few tidal cycles, however, the diesel would be mostly flushed out.

T/B SEASPAN 824
Wrangell Narrows, Alaska
October 27, 1987

NOAA Response,
cont.

Conclusion

Contacts

Anchorage

An overflight on the morning of October 27 revealed some diesel on the western side of the Wrangell Narrows but not in recoverable quantities, and no diesel was sighted in Blind Slough. Slight leakage from the barge prompted the Coast Guard On-Scene Coordinator to order a boom around the vessel. An underwater hull survey of the SEASPAN 824 revealed several large cracks in the #1 port tank.

An overflight on the morning of October 28 found no evidence of diesel in Wrangell Narrows. The case was closed on November 4.

Larson, Robert, Alaska Department of Fish and Game, Petersburg, personal communication, October 27, 1987.

Manen, Carol-Ann, National Oceanic and Atmospheric Administration Alaska Regional Response Team representative, Anchorage, personal communication, October 27, 1987.

Metsker, Howard, U.S. Fish and Wildlife Service, Anchorage, personal communication, October 27, 1987.

Michel, Dr. Jacqueline, Research Planning Institute, Columbia, South Carolina, personal communications, October 27-28, 1987.

Slater, Claudia, Alaska Department of Fish and Game, Anchorage, personal communication, October 27, 1987.

Watabayashi, Glen, National Oceanic and Atmospheric Administration, Seattle, personal communication, October 27, 1987.

Anchorage

F/V ICY QUEEN

Suemez Island, Meares Passage, Alaska

January 15, 1988

John Whitney, Scientific Support Coordinator

Incident Summary

Late on January 14, 1988, the 55-foot fishing vessel ICY QUEEN capsized in Meares Passage on the west side of Prince of Wales Island. The six crewmen were rescued shortly thereafter, but 20-knot winds blew the vessel aground on a rocky beach on the west side of Suemez Island with a tank containing approximately 800 gallons of diesel.

NOAA Response

NOAA/OMA was notified of the incident at 1240 on January 15, 1988, by the U.S. Coast Guard Marine Safety Office, Juneau, and requested to help evaluate the situation. NOAA advised the Coast Guard that, due to the vessel's remoteness and the small quantity of diesel involved, a response by the Coast Guard was not practical.

Conclusion

Divers plugged the ICY QUEEN's fuel vent holes and freed the vessel from its rocky beach grounding by cutting numerous fishing nets which had become tangled on the rocks. Local vessel owners then towed the ICY QUEEN to a sandy beach for salvage. No pollution occurred.

Contacts

Watabayashi, Glen, National Oceanic and Atmospheric Administration, Seattle, personal communication, January 15, 1988.

Anchorage

M/V FRANK H. BROWN

Skagway, Alaska

January 26, 1988

John W. Whitney, Scientific Support Coordinator

Incident Summary

At about 0800 on January 26, 1988, the M/V FRANK H. BROWN, a Canadian cargo and fuel carrier tied up at the Skagway, Alaska, dock, noticed a leak. The smell of gas fumes and discoloration of the water were the initial indications that gas was leaking at an unknown rate from a hole of unspecified size in a stern tank.

The punctured tank had a capacity of 124,000 gallons and was nearly full of regular gasoline. Actions were immediately initiated to offload the tank to shoreside facilities. At the onset of the incident the wind was calm. However, by 1000 the wind had built to nine knots from the north and continued increasing throughout the day. Response crews from the White Pass Transportation Co. initially boomed off the vessel but shortly thereafter opened the boom to avoid a fire hazard, on the advice of the U.S. Coast Guard.

NOAA Response

NOAA/OMA was notified of the incident at 0930 on January 26, 1988, by the Coast Guard MSO Juneau, and requested to assist in dealing with the problem.

The NOAA Scientific Support Coordinator (SSC) advised the Coast Guard against booming around the vessel because of the fire hazard posed by concentrated gasoline vapors. Both the wind and the tidal current were acting to move the gasoline and the fumes south down Lynn Canal away from the dock and town. NOAA provided tidal current information for the next 48 hours, as well as the advice that the gasoline's persistence would probably be very short-lived.

The SSC contacted the U.S. Fish and Wildlife Service, Alaska Department of Fish and Game, and the National Marine Fisheries Service to ascertain environmental resources at risk

M/V FRANK H. BROWN
Skagway, Alaska
January 26, 1988

NOAA Response,
cont.

Conclusion

Contacts

Anchorage

from a spill. Keeping the pollution away from the estuary of the Skagway River and a fish hatchery approximately one mile south of Skagway were the main concerns.

By 1000 on January 26, the gasoline leak had stopped due to unloading and re-ballasting efforts. Gauging indicated that approximately 2,814 gallons of gasoline had been lost, and divers located a small crack in the #4 starboard tank. As Lynn Canal and the Skagway harbor are very deep, the Coast Guard believes that the vessel grounded while passing through the Wrangell Narrows, over 200 miles to the south, 22 hours before the leak was discovered. A loss of gasoline probably occurred over that entire distance so that the actual product loss in Skagway was only 200-300 gallons. The case was closed on January 27.

Hall, Janet, Alaska Department of Fish and Game, Juneau, personal communication, January 26, 1988.

Lee, Lief, National Weather Service Forecast Office, Juneau, personal communications, January 26, 1988.

Manen, Carol-Ann, NOAA Regional Response Team representative, Anchorage, personal communication, January 26, 1988.

Matthews, Floyd, White Pass Transportation Company, Skagway, Alaska, personal communication, January 26, 1988.

Metsker, Howard, U.S. Fish and Wildlife Service, Anchorage, personal communication, January 26, 1988.

Slater, Claudia, Alaska Department of Fish and Game, Anchorage, personal communication, January 26, 1988.

Watabayashi, Glen, National Oceanic and Atmospheric Administration, Seattle, personal communication, January 26, 1988.

Anchorage

Juneau Ready-Mix
Lemon Creek
Juneau, Alaska
February 29, 1988

John W. Whitney, Scientific Support Coordinator

Incident Summary

On February 28, 1988, a leak developed in an old, 4,000-gallon storage tank owned by Juneau Ready-Mix. The storage tank contained a heavy, thick petroleum product that was used as a source of asphalt. The leak emptied into Lemon Creek, approximately .75 miles from Gastineau Channel between the Juneau airport and the town of Juneau. An estimated 1,200 gallons of the heavy, black oil escaped from the tank and coated sections of the creek bank, extending approximately 1 mile downstream to Gastineau Channel and the Mendenhall wetlands.

The leaking tank was plugged and bermed by the evening of February 28. Deflection booms were placed across Lemon Creek to channel the oil into a collection area. Oiling along the creek was described as a "bathtub ring" up to two feet wide. The oil spill produced a heavy oil smell, and oil on the shore was thick and goeey. No oiled birds were observed.

NOAA Response

NOAA/OMA was notified of the incident at 0930 on February 29, 1988, by the U.S. Coast Guard Marine Safety Office, Juneau. The Alaska State Departments of Fish and Game and Environmental Conservation requested additional information on environmental resources at risk, and confirmation on the cleanup procedures being employed.

The NOAA Scientific Support Coordinator (SSC) learned from the U.S. Fish and Wildlife Service that some geese and ducks were overwintering in the Mendenhall wetlands, but that it was still too early for any major influx of birds. However, NOAA's Juneau office reported that Lemon Creek contains many coho salmon eggs and is a prime spawning and rearing area for the coho.

Juneau Ready-Mix
Juneau, Alaska
February 29, 1988

NOAA Response,
cont.

Conclusion

Contacts

Anchorage

The SSC contacted the U.S. Department of Defense's Regional Response Team representative to ascertain the role of the Army Corps of Engineers in a wetlands response, and was told that, since the wetlands are basically inaccessible to responders, the Corps of Engineers had no role. This information was related to the Coast Guard.

Juneau Ready-Mix maintained responsibility for the spill cleanup and utilized sorbent pads, shovels, and some mechanical equipment to pick up the oil. By March 3, an estimated 93% of the oil, 45 cubic yards of oiled debris in 400 bags, had been removed from the shorelines and grassy areas. Most of the oil will be recycled at the asphalt plant where it originated. No oiled birds were observed, and minimal damage occurred to wildlife habitat. According to the Department of Fish and Game, the part of Lemon Creek that was affected had little or no fish habitat.

Bergmann, Pam, U.S. Department of the Interior Regional Response Team representative, Anchorage, personal communication, February 29, 1988.

Haavig, Steve, Alaska Department of Environmental Conservation, Juneau, personal communication, February 29, 1988.

Manen, Carol-Ann, NOAA Regional Response Team representative, Anchorage, personal communications, February 29-March 3, 1988.

Metsker, Howard, U.S. Fish and Wildlife Service, Anchorage, personal communications, February 29-March 3, 1988.

Mullins, Merv, U.S. Department of Defense Regional Response Team representative, Anchorage, personal communication, February 29, 1988.

Slater, Claudia, Alaska Department of Fish and Game, Anchorage, personal communications, March 1-3, 1988.

Anchorage

F/V DEFIANCE
Ketchikan, Alaska
May 20, 1988

John W. Whitney, Scientific Support Coordinator

Incident Summary

For the past several months, the DEFIANCE, a 156-foot fish processor, has been docked at the Southeast Alaska Fisheries Center pier in Ketchikan, Alaska, with a bilge pump continuously pumping water from its old wooden hull. The vessel has 3,000 gallons of diesel onboard in a secure tank. Now the City of Ketchikan would like to pull the electric plug on the bilge pump, due to an unpaid electrical bill. If this takes place, the vessel would sink, with fuel either flowing out the fuel tank vent holes or catastrophically releasing as the result of a tank failure.

NOAA Response

NOAA/OMA was notified of the situation at 1130 on May 20, 1988, by the U.S. Coast Guard Marine Safety Office, Juneau, and asked for advice on the size and fate and effects of the potential oil slick. NOAA was also asked to advise on the environmental resources at risk if the vessel was allowed to sink.

The NOAA Scientific Support Coordinator advised the Coast Guard that sinking the vessel could produce two scenario extremes. The most likely scenario would be a small, continuous leak from the tank's vent pipes. However, a catastrophic release of the entire fuel tank could occur any time during or after the sinking of the vessel. Since the vessel was subject to the Tongass Narrows currents, the visible extent of the slick and sheen could range from a few meters in length to a few thousand meters, respectively.

NOAA suggested that the Coast Guard check the water depth at the pier because a partial sinking could result in a tidally induced pumping action which would cause a much greater rate of outflow of diesel fuel.

F/V DEFIANCE
Ketchikan, Alaska
May 20, 1988

NOAA Response,
cont.

Conclusion

Contacts

Anchorage

Consultation with resource agencies revealed large populations of herring and chinook salmon, and thousands of seabirds, including 50 bald eagles, in the vessel's immediate vicinity. Any of these animals could be affected by a release.

As the Coast Guard was unable to contact the owner of the vessel, any action taken on their part would be an intervention under Coast Guard guidelines. Instead, the Southeast Alaska Fisheries, owner of the pier where the DEFLANCE is docked, has agreed to remove the diesel fuel.

Dahlin, Jeff, Research Planning Institute, Columbia, South Carolina, personal communication, May 23, 1988.

Doherty, Phil, Alaska Department of Fish and Game, Ketchikan, personal communication, May 23, 1988.

Galt, Jerry, National Oceanic and Atmospheric Administration, Seattle, personal communication, May 20, 1988.

Manen, Carol-Ann, NOAA Regional Response Team representative, Anchorage, personal communication, May 23, 1988.

Metsker, Howard, U.S. Fish and Wildlife Service, Anchorage, personal communication, May 23, 1988.

Trasky, Lance, Alaska Department of Fish and Game, Anchorage, personal communication, May 23, 1988.

Watabayashi, Glen, National Oceanic and Atmospheric Administration, Seattle, personal communication, May 20, 1988.

Anchorage

T/B KENAI

Dixon Entrance, Southeast Alaska

July 18, 1988

John W. Whitney, Scientific Support Coordinator

Incident Summary

On July 18, 1988, the the 479-foot barge, KENAI, being pulled by Crowley Maritime's SEAWOLF, was en route to Dutch Harbor, Alaska from Dixon Entrance. That afternoon, the U.S. Coast Guard Marine Safety Office (MSO) in Juneau was notified that the KENAI was leaking diesel fuel from a crack in its starboard wing tank at a rate of 20-40 gallons per hour. The leaking fuel tank contained 135,000 gallons of fuel.

Before allowing the barge to continue to Dutch Harbor, the Coast Guard insisted that the leak be patched. The Alaska Department of Environmental Conservation agreed to allow the tug and barge to continue to Ray Anchorage on the east side of Duke Island where a float plane could bring in divers and a wet patch kit from Ketchikan.

NOAA Response

NOAA/OMA was notified of the incident at approximately 1630 on July 18, 1988, by the Coast Guard MSO, Juneau. The Coast Guard asked NOAA to comment on whether the Ray Anchorage area was suitable for holding the barge while a wet patch kit was flown in and applied.

The NOAA Scientific Support Coordinator contacted local experts and the Alaska Department of Fish and Game (ADFG) office. NOAA learned that a salmon gillnet operation was in progress along the mainland coast between Sitklan Island and Foggy Bay. The KENAI would have to pass close to this area to arrive at Ray Anchorage, thereby posing a serious threat to this resource.

ADFG suggested that the barge be taken to McLean Arm, on the southeast end of Prince of Wales Island. The SSC advised the Coast Guard of this recommendation and suggested that the tug

T/B KENAI
Dixon Entrance, Southeast Alaska
July 18, 1988

NOAA Response,
cont.

Conclusion

Contacts

Anchorage

and barge traverse the 40 miles to McLean Arm as slowly as possible in order to achieve maximum dilution of the diesel.

The KENAI arrived at McLean Arm shortly after midnight on July 18 and held approximately one mile off the coast to await the arrival of the float plane. By the next morning, the barge was no longer leaking. Divers found no crack in the hull; the leak had developed in an old through-hull fitting. About 500 gallons of diesel fuel were lost in this incident.

Galt, Jerry, National Oceanic and Atmospheric Administration, Seattle, personal communication, July 18, 1988.

Gustafson, Jack, Alaska Department of Fish and Game, Ketchikan, personal communication, July 18, 1988.

Hale, David, NOAA OCSEAP, Anchorage, personal communication, July 18, 1988.

Sundberg, Kim, Alaska Department of Fish and Game, Anchorage, personal communication, July 18, 1988.

Thorsteinson, Lyman, NOAA OCSEAP, Anchorage, personal communication, July 18, 1988.

Anchorage

F/V MELISSA CHRIS

Otstoia Island, Peril Straits, Alaska

August 19, 1988

John W. Whitney, Scientific Support Coordinator

Incident Summary

On August 18, 1988, the MELISSA CHRIS, a 78-foot, wooden-hulled fish processing vessel, ran aground on Otstoia Island, 60 miles southwest of Juneau. The vessel, listing up to 40°, carried 3,000 gallons of diesel fuel and lube oil. A sheen was reported coming off the vessel. Initially, the captain thought that he would be able to refloat the vessel on the next high tide, at 2000. However, a U.S. Coast Guard overflight on August 19 revealed that the Melissa Chris was lying on her starboard side.

NOAA Response

NOAA/OMA was notified of the incident at 0800 on August 19, 1988 by the Coast Guard Marine Safety Office, Juneau, and asked to provide a trajectory estimate and an analysis of environmental resources at risk. Contacts were made with the U.S. Fish and Wildlife Service, Alaska Department of Fish and Game, and NOAA, and it was learned that there were no environmental resources at immediate risk in case of a release. Moreover, strong tidal currents in this passage would rapidly flush out and disperse any diesel.

Conclusion

The owner of the vessel accepted responsibility for the incident and made plans to pump off the remaining fuel. However, between August 20 and 21, strong winds and heavy seas tore into the MELISSA CHRIS, releasing the balance of the 3,000 gallons of diesel. Due to the weather, no response was possible, and the vessel is now a salvage operation.

Contacts

Becker, Paul, NOAA Regional Response Team representative, Anchorage, personal communication, August 19, 1988.

Metsker, Howard, U.S. Fish and Wildlife Service, Anchorage, personal communication, August 19, 1988.

F/V MELISSA CHRIS
Otstoia Island, Peril Straits, Alaska
August 19, 1988

Contacts.
cont.

Anchorage

Schmidt, Art, Alaska Department of Fish and Game, Sitka,
personal communication, August 19, 1988.

Anchorage

F/V VALERIE G

Nehenta Bay, Gravina Island, Alaska

November 28, 1988

John W. Whitney, Scientific Support Coordinator

Incident Summary

On November 27, 1988, winds of up to 60 knots in Clarence Strait blew the fishing vessel VALERIE G hard aground at the head of Nehenta Bay on the southwest side of Gravina Island. The grounding occurred on an extremely high tide; efforts were unsuccessful to refloat the vessel, which contained about 250 gallons of diesel and around 25 gallons of lube oil. Due to the weather and the vessel's location, communications and overflights were virtually impossible.

NOAA Response

NOAA/OMA was notified of the incident on November 28, 1988, by the U.S. Coast Guard Marine Safety Office, Juneau. After some discussion, NOAA and the Coast Guard agreed that, due to the weather conditions and the quantity of fuel involved, mounting a response operation would be impractical. Nevertheless, resource agencies were notified of this incident.

Conclusion

The owner/operator of the vessel remained on-scene and oversaw the off-pumping of the above fuel to onshore 55-gallon drums. The drums were removed from the beach and returned to Ketchikan. On December 7, an overflight revealed that the vessel was still hard aground, listing to 45 degrees. A small, light sheen of oil was observed leaking from the wreck due to residual bilge oil. The case was closed on December 7. The owner intends to abandon the vessel.

Contacts

Becker, Paul, NOAA Regional Response Team representative, Anchorage, personal communication, November 28, 1988.

Bergmann, Pam, U.S. Department of the Interior Office of Environmental Protection, Anchorage, personal communications, November 28 and 30, 1988.

F/V VALERIE G
Nehenta Bay, Alaska
November 28, 1988

Contacts,
cont.

Anchorage

Robinson-Wilson, Everett, U.S. Fish and Wildlife Service,
Anchorage, personal communication, November 28, 1988.

Slater, Claudia, Alaska Department of Fish and Game, Anchorage,
personal communication, November 28, 1988.

Anchorage

M/V MARY KATHRYN H
Prince of Wales Island, Alaska
January 23, 1989

John W. Whitney, Scientific Support Coordinator

Incident Summary

At approximately 1800 on January 20, 1989, the tugboat MARY KATHRYN H grounded in heavy weather at the entrance to Smith Cove, on the east side of Prince of Wales Island. The vessel rested on its starboard side on a reef and was awash at high tide. The tug contained approximately 7,000 gallons of diesel, of which less than 100 gallons were lost prior to plugging the fuel tank vents. High winds from the southeast and heavy seas made access to the vessel difficult.

NOAA Response

NOAA/OMA was notified of the incident at 1700 on January 23, 1989 by the U.S. Coast Guard Marine Safety Office, Juneau. The Coast Guard requested trajectory analyses for an instantaneous release, and for a continuous release over a one-week period, as well as information on environmental resources at risk from a spill.

NOAA advised the Coast Guard that, with the persistent southeasterly wind, minimal flushing of the diesel in Smith Cove would occur with any type of release. Communication with Alaska natural resource agencies revealed that Smith Cove was not particularly rich in resources, having only a minimal amount of diving ducks and wintering waterfowl. However, logging occurs at a logging transfer station on the lands adjacent to Smith Cove.

Conclusion

Shortly after the incident occurred, divers plugged the tug's vents and the owner arranged for a boom to be placed around the vessel. Bad weather hampered salvage operations, but on January 26 the vessel was refloated and the diesel lightered. Only a light sheen was evident in Skowl Arm at any time. The vessel was towed to Ketchikan for repairs.

M/V MARY KATHRYN H
Prince of Wales Island, Alaska
January 23, 1989

Contacts

Anchorage

Becker, Paul, NOAA Regional Response Team representative, Anchorage, personal communications throughout the incident.

Gustafson, Jack, Alaska Department of Fish and Game, Ketchikan, personal communications throughout the incident.

Kegler, Al, Alaska Department of Environmental Conservation, Juneau, personal communication, January 24, 1989.

O'Clair, Chuck, NOAA National Marine Fisheries Service Auke Bay Lab, Juneau, personal communication, January 24, 1989.

Slater, Claudia, Alaska Department of Fish and Game, Anchorage, personal communication, January 24, 1989.

Torgimson, Gary M. 1984. The on-scene spill model (OSSM): a user's guide. Seattle: Office of Oceanography and Marine Assessment, NOAA. NOAA Technical Memorandum NOS OMA-12.

Watabayashi, Glen, NOAA Hazardous Materials Response Branch, Seattle, personal communications, January 23 and 24, 1989.

Anchorage

M/V BONHEUR

Sitkoh Bay, Chatham Strait, Alaska

August 12, 1989

John W. Whitney, Scientific Support Coordinator

Incident Summary

At 1500 on August 12, 1989, the pleasure craft, BONHEUR, sank after running aground on rocks in Sitkoh Bay, Alaska. The vessel was carrying 9,000 gallons of diesel fuel. The owner provided boom that contained much of the spilled oil.

NOAA Response

NOAA/OMA was notified of the incident at approximately 1900 on August 12, 1989, and was asked to estimate the movement of the diesel and to evaluate potential impacts on the numerous anadromous streams in the area.

NOAA advised the Coast Guard that a small leak of a few gallons per minute would cause roughly a half-mile sheen in the bay that would rapidly evaporate and disperse with little effect on the anadromous stream at the head of the bay. A catastrophic release, however, would result in sheen in the whole of Sitkoh Bay extending out into Chatham Strait; local mortalities would result and the water intake at the cannery one mile away would probably be affected.

Conclusion

The Coast Guard estimated that approximately 1,500 gallons of diesel were lost from the vessel, of which roughly one-half was recovered as result of the rapid containment actions. The vessel was raised on August 14, 1989.

Contacts

Michel, Jacqueline, Research Planning Institute, Columbia, South Carolina, personal communication, August 12, 1989.

Payton, Debbie, NOAA Hazardous Materials Response Branch, Seattle, personal communication, August 12, 1989.

Torgimson, Gary M. 1984. The on-scene spill model (OSSM): a user's guide. Seattle: Ocean Assessments Division, NOAA. NOAA Technical Memorandum NOS OMA-12.

Anchorage

F/V OCEAN PACIFIC

Tongass Narrows, Ketchikan, Alaska

August 12, 1989

John W. Whitney, Scientific Support Coordinator

Incident Summary

At 2024 on August 12, 1989, the fish processor OCEAN PACIFIC, sank in 22 fathoms of water at its mooring in Tongass Narrows. The vessel contained 15,000 gallons of diesel fuel oil; five barrels of lube oil; five barrels of aviation gas; 150-pound bottles of anhydrous ammonia, chlorine, acetylene, and oxygen; and 2,150 pounds of anhydrous ammonia in the vessel's refrigeration system. When it sank, the OCEAN PACIFIC had an estimated 200,000 pounds of processed and packaged pink salmon in the freezer hold and 120,000 pounds in two refrigerated seawater tanks.

Initially, the vessel leaked at an estimated 10 gallons per minute, creating sheening and recoverable oil in the Narrows. Divers plugged the vents and reduced the discharge to an estimated one gallon per hour. A salvage vessel was on scene and containment boom, lined with sorbent boom, was maintained around the wreck. Oiling was reported several miles north and south of the sunken vessel. Attempts were made to pump off the fuel in the vessel's tanks.

NOAA Response

NOAA/OMA was notified of the incident at 2230 on August 12, 1989, by the U.S. Coast Guard Marine Safety Office, Juneau, and was requested to provide information on the fate and effects of the oil and the hazardous materials as well as of the decomposition of the fish on the vessel.

NOAA advised that the estimated 10 gallon-per-minute discharge of diesel would be naturally dispersed in the strong currents of Tongass Narrows and would thus probably have little effect. Furthermore, the fish in the seawater holds would rapidly be scavenged by amphipods and any decomposition would produce small, harmless amounts of hydrogen sulfide and methane.

F/V OCEAN PACIFIC
Ketchikan, Alaska
August 12, 1989

NOAA Response,
cont.

Conclusion

Contacts

Anchorage

The processed fish in the freezer, however, would not begin rotting for one to three weeks. The gases could be released by punching a hole in the freezer or opening its door.

After two weeks, an estimated 1,500 gallons of oil had been recovered through pumping alone, and an undetermined amount of oil recovered through the use of sorbent materials. Within two to three days all the chemical bottles had been recovered or accounted for. The vessel will probably remain on the bottom of Tongass Narrows.

Becker, Paul, NOAA Outer Continental Shelf and Environmental Assessment Program, Anchorage, personal communications, August 13-15, 1989.

Robinson-Wilson, Everett, U.S. Fish and Wildlife Service, Anchorage, personal communication, August 13, 1989.

Torgimson, Gary M. 1984. The on-scene spill model (OSSM): a user's guide. Seattle: Ocean Assessments Division, NOAA. NOAA Technical Memorandum NOS OMA-12.

Trasky, Lance, Alaska Department of Fish and Game, Anchorage, personal communication, August 13, 1989.

Anchorage

Coast Guard Cutter WOODRUSH
Sitka, Alaska
December 14, 1989

John W. Whitney, Scientific Support Coordinator

Incident Summary

After repairs were completed on the CGC WOODRUSH on December 13, 1989, in Sitka, a valve was accidentally left open while fuel was being transferred from one tank to another. Approximately 1,600 gallons of diesel escaped onto the deck and about 500 gallons spilled into Sitka Channel. The wind and waves spread the diesel through the channel toward Thomsen Harbor and the islands north of the channel. A U.S. Coast Guard helicopter crew reported a 3-mile long sheen extending north to Starrigavan Bay on December 14.

NOAA Response

NOAA/OMA was notified of the incident on December 14, 1989, by U. S. Coast Guard Marine Safety Office (MSO) Juneau because the sheen had not dissipated as rapidly as anticipated. The MSO also contacted local resource agencies. These agencies had no concerns about environmental resources.

NOAA suggested that sorbent booms be dragged through the sheen if it became unsightly. NOAA advised MSO that winds and currents would ultimately disperse and dissipate the sheen.

Windless, calm-water conditions on December 14 and 15 inhibited the natural dispersion and dissipation of the diesel. Some of the diesel impacted the beaches north of Sitka.

Conclusion

Personnel from the WOODRUSH, using sorbent boom and pads, successfully completed the cleanup of the recoverable oil.

CGC WOODRUSH
Sitka, Alaska
December 14, 1989

Anchorage

References

Becker, Paul, NOAA Regional Response Team representative, Anchorage, personal communications, December 15, 1989.

Bergmann, Pam, U. S. Department of the Interior Office of Environmental Protection, Anchorage, personal communications, December 15, 1989.

Slater, Claudia, Alaska Department of Fish and Game, Anchorage, personal communications, December 15, 1989.

Anchorage

T/V FRANK H. BROWN
Wrangell Narrows, Alaska
January 20, 1990

John W. Whitney, Scientific Support Coordinator

Incident Summary

During the evening of January 20, 1990, the Canadian tanker FRANK H. BROWN ran aground on Burnt Island reef. The reef is 18 miles south of Petersburg, Alaska, in the Wrangell Narrows, a 24-mile long channel in the Inside Passage that runs between Seattle, Washington, and Juneau, Alaska. The 396-foot tanker vessel, carrying 1.8 million gallons of diesel fuel, lube oil, and gasoline was en route from Vancouver, Canada, to Skagway, Alaska, when it hit the reef and ruptured its #1 portside cargo tank.

NOAA Response

NOAA/OMA was notified of the incident on January 20, 1990, by the U. S. Coast Guard Marine Safety Office (MSO) Juneau. MSO indicated that approximately 25,000 gallons of gasoline had been released and that it was believed that only a single tank had been punctured.

NOAA advised MSO that, because of the high currents in Wrangell Narrows, nothing could be done to recover the gasoline already released, which would probably evaporate and dissipate within 12 to 24 hours. The MSO said that the state agencies showed no concerns about damage to the environment at this time of year. Notifications were made to the federal agencies concerned. The MSO stated that they hoped to refloat the vessel with the 3-foot higher tide the next morning.

Conclusion

The crew was able to plug the leak within 2 hours of the grounding and the vessel was successfully refloated on the morning of January 21, 1990. The vessel was taken to nearby Skow Bay. The remaining oil was offloaded and divers discovered a 2-foot round hole in the hull. A total

T/V FRANK H. BROWN
Wrangell Narrows, Alaska
January 20, 1990

Anchorage

Conclusion, cont.

of 36,000 gallons of gasoline was released. It quickly broke up into unrecoverable thin sheens and disappeared from the water's surface. No environmental damage was reported.

References

Bergman, Will, Alaska Department of Fish and Game, Petersburg, personal communications, January 20, 1990.

Bergmann, Pam, U.S. Department of the Interior Office of Environmental Protection, Anchorage, personal communications, January 20, 1990.

Becker, Paul, NOAA Regional Response Team representative, Anchorage, personal communications, January 20, 1990.

Sundberg, Kim, Alaska Department of Fish and Game, Anchorage, personal communications, January 20, 1990.

Anchorage

F/V LADY LOUISE

Takatz Bay, Chatham Strait, Alaska

July 14, 1990

John W. Whitney, Scientific Support Coordinator

Incident Summary

In the early afternoon of July 14, 1990, the 54-foot fishing vessel LADY LOUISE sank in 20 feet of water in Takatz Bay, Chatham Straits, southeast Alaska. A sheen was reported that extended approximately 2 miles to the north. Divers were immediately dispatched to the scene to plug the vents to prevent further leakage of the vessel's 1,700 gallons of diesel oil.

NOAA Response

NOAA/OMA was notified of the incident on July 14, 1990, by the U.S. Coast Guard Marine Safety Office (MSO), Juneau. NOAA informed MSO that the only resource in the area that was likely to be impacted was the Hidden Falls State Hatchery, 4 to 5 miles north of the incident. The hatchery was contacted and informed of the spill.

Conclusion

The vessel was refloated on the evening of July 16. An estimated 700 gallons of diesel was lost in the incident. No environmental damage was reported.

Anchorage

Kensington Mine
Lynn Canal, Alaska
August 24, 1990

John W. Whitney, Scientific Support Coordinator

Incident Summary

On August 23, 1990, the U. S. Coast Guard Marine Safety Office (MSO) Juneau was notified by Echo Bay, Kensington Mine of an overfilled day tank that had spilled 2,500 gallons of #2 diesel fuel into loose gravel/cobble. The fuel subsequently flowed into Sherman Creek and entered Lynn Canal.

NOAA Response

NOAA/OMA was notified of the incident on August 24, 1990, by MSO Juneau and asked to determine the evaporation rate of diesel after it seeps into the ground.

NOAA informed MSO that no evaporation was likely to have occurred after the diesel went into the ground because there was no breeze or mobile air pockets to carry the saturated air away. This information helped determine an oil budget and how much fuel could be expected to be collected at the collection points.

Kensington Mine immediately assumed responsibility for the cleanup; over the course of the next few days, the mine installed ten siphon dams and established collection points using sorbent boom and pads.

Conclusion

Initial diesel collection was estimated at 600 gallons; however, after starting a low pressure flush, more diesel fuel was recovered. By September 12, the leech rate of diesel was down to 1 to 2 gallons per day with none entering the waterway.

Kensington Mine
Lynn Canal, Alaska
August 24, 1990

Anchorage

References

Reilly, Tim, Research Planning Inc., Columbia, South
Carolina, personal communications, August 25, 1990.

NOAA Response Report

T/B Chilkat Warrior
Skowl Arm, Prince of Wales Island, Alaska
September 16, 1991

John W. Whitney, Scientific Support Coordinator

INCIDENT SUMMARY

On the early morning of September 16, 1991, the *T/B Chilkat Warrior* a 272-foot tank barge, grounded at Smith Cove off of Skowl Arm and the east side of Prince of Wales Island (132°20.3'W, 55°26'N). The barge was laden with approximately 106,000 gallons of diesel and 3,000 gallons of gasoline along with a deck load of timber. The grounding damaged the rake and holed the empty port centerline tank. Weather at the time was light winds from the southeast to east.

NOAA RESPONSE

NOAA was notified of the incident on the afternoon of September 16 by the U.S. Coast Guard Marine Safety Office, Juneau, and asked to provide information concerning trajectories and weather. At the time the vessel was considered stable and not at risk. NOAA advised the Coast Guard that tidal currents were very small (less than one knot) and that any net current would thus be wind-dominated. Weather forecast and outlook information were also transmitted.

CONCLUSION

The barge was refloated on the early morning of September 17. After being inspected by local salvors and Coast Guard Strike team personnel, the barge was moved to Ward's Cove, north of Ketchikan. There the timber was offloaded, the gasoline was pumped to tank trucks, and the diesel was shifted to aft tanks. The barge then went on the dry docks at Ketchikan for repair. There was no loss of fuel.

CONTACTS

Marine Forecaster, NOAA National Weather Service, Juneau, Alaska, personal communication, September 16, 1991.

Simecek-Beatty, Debra, NOAA Hazardous Materials Response and Assessment Division, Seattle, personal communication, September 17, 1991.

Watabayashi, Glen, NOAA Hazardous Materials Response and Assessment Division, Seattle, personal communication, September 17, 1991.

Potential Spill

Name of Spill: M/V Hanei Sky

NOAA SSC: John W. Whitney

Date of Spill (mmddyy): 10/26/93

Location of Spill: Fontaine Island, Shakan Bay, NW Prince of Wales Island

Latitude: 56,07,N

Longitude: 133,28.5,W

Oil Product: Bunker Fuel and Diesel

Oil Type:

Type 2 - Light Oils (diesel, No. 2 fuel oil, light crudes)

Type 4 - Heavy Oils (heavy crude oils, No. 6 fuel oil, bunker c)

Barrels: 3250 Bbls of Bunker C and 300 Bbls of Diesel

Source of Spill: Non-Tank Vessel

Summary: In some extremely high wind conditions, the 540-foot Japanese log freighter, the M/V Hanei Sky, was blown aground on the northwest side of Prince of Wales Island on Fontaine Island in Shakan Bay. Winds were up to 60 knot gusts from the south, and the industry oil spill coop, SEAPRO, that responded to the spill, described this area as .."the worst blow hole in Southeast." The vessel had 136,000 gallons of bunker oil and 12,000 gallons of diesel. Both SEAPRO and the Coast Guard began mobilization of major resources including several tugs and barges, a Coast Guard cutter, helicopters for boom and pump delivery, a C-130 for overflights, Canadian resources, among other items. NOAA was asked to provide weather updates and a trajectory for a worst case release of all the oil. Immediately east of the grounding local is the El Capitan Passage, a very sensitive area containing harbor seals, sea lions, king and dungeness crab, as well as much marshy and tideflat habitat for birds and invertebrates. On the first high tide after the grounding, however, the vessel refloated and was moored in 10 fathoms of water with no damage or pollution occurring. The weather improved and mobilization of most of the response equipment was halted.

Name of Spill:	Tug <i>May</i>
NOAA SSC:	John W. Whitney
USCG District	17
Date of Spill:	11/22/92
Location of Spill:	Frederick Sound, Alaska
Latitude:	57°05' N
Longitude:	133°10' W
Spilled Material:	diesel
Spilled Material Type:	2
Amount:	167 barrels
Source of Spill:	non-tank vessel
Resources at Risk:	none
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	none
Keywords:	evaporation

Incident Summary:

On November, 22, 1992, while pulling a tow of floating logs in calm water, the tug *May* suddenly capsized and sank in 50 fathoms at the mouth of Farragut Bay. One crewmember escaped; three others went down with the vessel and were presumed drowned. The USCG launched an unsuccessful search and rescue mission that lasted about ten days.

The tug had 7,000 gallons of diesel onboard and immediately released several hundred gallons when it sank. The log boom, which was still attached, positioned itself directly over the sunken vessel and the oil released contaminated it. After the initial release, fuel continued to rise from the vessel at the rate of a few gallons per hour causing a small surface sheen that evaporated and dispersed rapidly.

Behavior of Spilled Material:

Due to the nature of diesel and the strong winds on the night of November 22 and the next day, much of the oil either dispersed or evaporated. No shorelines were impacted. Small amounts of diesel continued to be released for approximately ten days, but it all evaporated and/or dispersed rapidly.

Countermeasures and Mitigation:

Southeast Alaska Petroleum Resource Organization (SEAPRO), the oil spill cooperative, responded with sorbent pads, booms, and personnel. Due to the strong currents in Frederick Sound, attempts to surround and capture the rising oil plume were unsuccessful. Most of the cleanup effort was directed at cleaning the oil-contaminated log boom with sorbents. About 800 gallons of fuel were recovered and the sorbents were burned on the beach. A remote camera is to be deployed to ascertain the condition and position of the sunken vessel. When weather permitted, cleanup efforts continued for ten days.

NOAA Activities:

NOAA was notified of the incident on November 22, 1992, by USCG MSO Juneau.

The SSC provided weather projections, tidal current updates, and resources at risk information to the cleanup site as necessary. NOAA indicated that there were no resources at risk at this time of year. The NOAA response concluded after five days.

References:

NOAA. 1992. *CAMEO™ 4.0 for the Apple® Macintosh™ Computer*. Washington, D.C.: National Safety Council. 400 pp.

Name of Spill:	M/V <i>Yorktown Clipper</i>
NOAA SSC:	John W. Whitney
USCG District:	17
Date of Spill:	08/18/93
Location of Spill:	Geikie Rock in Glacier Bay National Park, Alaska
Latitude:	58°42' N
Longitude:	136°20' W
Spilled Material:	diesel
Spilled Material Type:	2
Amount:	100 gallons
Source of Release:	non-tank vessel
Resources at Risk:	waterfowl, gulls, and eagles; Black Oyster Catchers and molting Scooters
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	occurred in a National Park
Keywords:	evaporation, salvage, air activated pumps

Incident Summary:

At 1600 on August 18, 1993, the cruise vessel M/V *Yorktown Clipper* ran aground on the charted Geikie Rock, about 20 miles up Glacier Bay. The weather was clear and calm at the time of the incident. The vessel incurred major damage to the bow section. Approximately 100 gallons of diesel was released into the water from a 7,200 gallon bow fuel tank before the large influx of water created a water bottom. The vessel was rapidly taking on water and in danger of sinking, but the USCG provided air-deployable pumps that curbed the onrush of water. The *Yorktown Clipper* limped into Shag Cove, a small arm in Glacier Bay, under its own power where it was boomed while divers, salvors, and marine architects worked to evaluate, stabilize, and patch the holes with wood plugs, epoxy, and concrete.

Because the vessel was within the bounds of Glacier Bay National Park, park service personnel were concerned about an additional release of diesel as it exited Glacier Bay. With NOAA assisting, they evaluated resources, made contingency plans, and issued the following conditions under which the vessel could leave the Bay.

- ☐ The vessel will get underway shortly before high tide and transit the bay at ebb tide at no more than five knots down the main channel
- ☐ An LCM with pollution response equipment will escort the ship
- ☐ Speed outside Glacier Bay will be determined by the vessel's master
- ☐ The vessel will make periodic security broadcasts while inside Glacier Bay

The vessel safely exited the Bay on August 24.

Media interest was very high throughout the event because the incident occurred in a National Park.

Behavior of Oil:

A sheen of 200 by 500 yards was reported after the initial release of the 100 gallons of diesel. However, the diesel rapidly thinned, dispersed, and evaporated. No areas were impacted.

Countermeasures and Mitigation:

No countermeasures were used on the spill; however, while under repair, the vessel was completely boomed off as was a salmon stream in Shag Cove.

NOAA Activities:

NOAA read about this incident in the paper on August 18, 1993, and contacted MSO Juneau for details. The USCG reported that the amount of product lost was insignificant, but the National park personnel were concerned and asked for NOAA's assistance. NOAA assured the parks personnel that the possibility of an additional catastrophic release of the remaining 13,000 gallons of diesel was very unlikely. The SSC used examples of previous Cook Inlet diesel spills to explain that the high-current environment of the inlet made response efforts ineffectual because the diesel thinned and dispersed so rapidly that the chances of significant impact were very low.

NOAA was involved in this response until August 24.

Name of Spill:	F/V <i>Billy and I</i>
NOAA SSC:	John W. Whitney
USCG District:	17
Date of Spill:	08/21/93
Location of Spill:	San Fernando Island, southeast Alaska
Latitude:	55°28' N
Longitude:	133°42' W
Spilled Material:	diesel
Spilled Material Type:	2
Amount:	10 gallons
Source of Release:	non-tank vessel
Resources at Risk:	none
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Keywords:	evaporation

Incident Summary:

Shortly before midnight on August 20, 1993, the F/V *Billy and I* was reportedly taking on water near the south end of San Fernando Island, west of Prince of Wales Island, in southeast Alaska. When the USCG arrived, the vessel was at a 90 degree list to the port side and there was a sheen in the water. The vessel carried 600 gallons of diesel.

With the help of private boats, the owner was able to close all vents from which fuel could escape. A day tank located on the upper part of the vessel released approximately 10 gallons of diesel. A hole on the starboard side two feet below the waterline was patched with plywood and visqueen material. Sorbent boom was placed around the *Billy and I*, but the amount collected was minimal because wind and tidal action caused the sheen to dissipate rapidly. After being dewatered on the previous low tide, the vessel refloated on the incoming tide and was towed into Craig and put on the grid.

The winds during the incident were from the south-southeast, 20-30 knots.

Behavior of Oil:

The sheen dissipated rapidly with wind and wave actions.

NOAA Activities:

NOAA was notified of the incident on August 21, 1993. NOAA told the USCG that any additional diesel released would sheen and dissipate rapidly.

Name of Spill:	F/V <i>Westerly</i>
NOAA SSC:	John W. Whitney
USCG District:	17
Date of Spill:	02/15/94
Location of Spill:	Glacier Bay National Park in southeast Alaska
Latitude:	58°31' N
Longitude:	135°59' W
Spilled Material:	diesel
Spilled Material Type:	2
Amount:	1,500 gallons
Source of Release:	non-tank vessel
Resources at Risk:	marine mammals and birds
Other Special Interest:	none
Keywords:	none
Incident Summary:	

The 80-foot F/V *Westerly*, preparing for crab fishing in Glacier Bay National Park with crab pots stacked high on its decks, was rendered unstable by high winds. The vessel sank just south of Strawberry Island in 37 fathoms of water with roughly 1,500 gallons of diesel onboard. Because the high winds made on-site assessment impossible, the National Park Service (NPS) conducted overflights. The overflights showed minor sheering for several days, decreasing to nothing. No response was possible or necessary. Salvage possibilities were discussed with NPS personnel, who would have liked to have the vessel removed, but recognized the risk and expense for such an operation may make removal impossible. The case was closed on February 18

Behavior of Oil:

The diesel was not catastrophically released, but trickled to the surface from air vents in the fuel tanks. The extremely high winds and natural high tidal currents in Glacier Bay caused the diesel to disperse and dissipate within a very short time. No areas were impacted. The actual amount of diesel that surfaced is not known.

Countermeasures and Mitigation:

None. Spilled diesel was dispersed naturally by wind and wave actions.

NOAA Activities:

NOAA was notified of the incident on February 15, 1994, by USCG Marine Safety Office (MSO) Juneau. The Scientific Support Coordinator (SSC) responded with weather and resources at risk information. NOAA notified the USCG that the most significant resources were nearby sea lion and harbor seal haulouts and a limited number of birds. It was believed that most resources had already sought off-water or protected water shelter from the intense winds. NOAA advised the USCG that no response was necessary or possible. It was anticipated that the small amount of diesel expected to surface would have minimal to no consequences to the wildlife or shorelines.

Potential Spill Report Format

Name of Spill: M/V Hanei Sky

NOAA SSC: John W. Whitney

Date of Spill (mmddyy): 10/26/93

Location of Spill: Fontaine Island, Shakan Bay, NW Prince of Wales Island

Latitude: 56,07,N

Longitude: 133,28.5,W

Oil Product: Bunker Fuel and Diesel

Oil Type:

Type 2 - Light Oils (diesel, No. 2 fuel oil, light crudes)

Type 4 - Heavy Oils (heavy crude oils, No. 6 fuel oil, bunker c)

Barrels: 3250 Bbls of Bunker C and 300 Bbls of Diesel

Source of Spill: Non-Tank Vessel

Name of Spill:	Skagway Harbor Diesel
NOAA SSC:	John W. Whitney
USCG District:	17
Date of Spill:	05/19/94
Location of Spill:	Skagway Harbor, Skagway, Alaska
Latitude:	59°17' N
Longitude:	135°27' W
Spilled Material:	diesel
Spilled Material Type:	2
Amount:	498 gallons
Source of Release:	tank vessel to facility pipeline
Resources at Risk:	salmon hatcheries
Other Special Interest:	none
Keywords:	evaporation

Incident Summary:

On May 19, 1994, # 2 diesel fuel spilled in Skagway Harbor when a gasket failed on a 12-inch pipeline during a fuel transfer from the tank barge *Alaskan Spirit* to the Whitepass Fuel facility in Skagway, Alaska. Whitepass Fuel informed the MSO that the diesel was contained and cleanup was underway using sorbent materials. Mop up continued throughout the day; only a sheen was visible by the next day. Whitepass Fuel hired a local diver to assess any damage to the Skagway School Hatchery; no damage was reported. The case was closed on May 24, 1994. Weather throughout the incident was sunny with light winds from the south.

Behavior of Oil:

Shortly after the incident the diesel was contained around and under the pier. As much as 50 percent of the diesel evaporated. Final gauging indicated that 498 gallons were lost in the water and Whitepass recovered approximately 168 gallons; the rest naturally dispersed. No areas appeared to be impacted.

Countermeasures and Mitigation:

Booms were used to contain much of the diesel and sorbents were used to mop it up. Two salmon hatcheries were on streams that fed into Skagway Harbor; neither released any fry until the diesel was completely cleaned up. No shoreline impact occurred.

NOAA Activities:

NOAA was notified of the incident on May 19, 1994, by the MSO. NOAA's response was by phone and fax. The SSC apprised MSO of weather information and resources at risk data. NOAA's supported this incident for one day.

References:

NOAA. 1993. ADIOS™ (Automated Data Inquiry for oil Spills) User's Manual. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

Potential Spill Report Format

Name of Spill: F/P Bristol Enterprise

NOAA SSC: John W. Whitney

Date of Spill (mmddyy): 102794

Location of Spill: 40 miles SW of Sitka in SE Alaska

Latitude: 56,20,N

Longitude: 135,30,W

Oil Product: diesel

Oil Type:

Type 2 - Light Oils (diesel, No. 2 fuel oil, light crudes)

Barrels: 1425

Source of Spill: Non-Tank Vessel

Summary:

The F/P Bristol Enterprise, an 185' vessel, caught fire in the engine room . The fire spread to the processing deck where it was sealed off and allowed to smolder out. The CG brought the vessel into Sitka Sound and moored it at the Alaska Pulp Mill dock where the burning urethane compartment was opened and entered. Information was provided to the CG on the extreme sensitivity of Sitka Sound at this time of year where as many as 10-12 humpback whales and numerous seals and sea lions pursue large concentrations of herring. Also 80-100 sea otters and abundant waterfowl and seabirds were in the area. Once the vessel was at dockside, NOAA provided information that hydrogen cyanide was the gases by-product of urethane combustion and made recommendations on entering the burning space and monitoring it for levels of hydrogen cyanide.

NOAA Activities:

NOAA was notified of the incident on May 19, 1994, by MSO Juneau. The SSC gave weather, tidal current, and trajectory information and resources at risk data to the responders. Dialogue with the USFWS and Alaska Department of Fish and Game indicated that salmon streams and eagles were near the spill area. NOAA passed this information on to the MSO. NOAA support ended after one day.

Name of Spill: F/V Miss Doreen

NOAA SSC: John W. Whitney

Date of Spill (mmddyy): 061595

Location of Spill: In Portage Bay on the North side of Kupreanof Island, SE Alaska

Latitude: 57,00,N

Longitude: 133,19,W

Oil Product: Diesel

Oil Type:

Type 2 - Light Oils (diesel, No. 2 fuel oil, light crudes)

Quantity: 260 gallons

Source of Release: Non-Tank Vessel

Resources at Risk:

Sheltered and exposed tidal flats and Intertidal marches

Other Special Interest:

None

Keywords:

Diesel, natural dispersion

Incident Summary:

In the early morning hours of June 15, the F/V Miss Doreen capsized for an unknown reason in Portage Bay on the north side of Kupreanof Island in Southeast Alaska. Two adults were recovered, but a ten year old girl was trapped in the vessel when it sank. Initially only sheening occurred. The Coast Guard out of MSO Juneau sent personnel to the scene to investigate. Later in the morning divers recovered the body of the young girl and confirmed that all 260 gallons of the diesel had been released from the fuel tanks. Reportedly a sheen one to two mile long sheen extended out in Frederick Sound, but there was nothing that could be done about it. Weather throughout the incident was overcast with light drizzle and light winds.

Behavior of Oil:

The small quantity of diesel thinned and naturally dispersed within 6-10 hours.

Countermeasures and Mitigation:

None

Other Special Interest Issues:

None

NOAA Activities:

The NOAA SSC in Anchorage was contacted by MSO Juneau the morning of June 15, 1995, regarding the capsizing of the F/V Miss Doreen and asked to provide weather and resource information support. As a result the USFWS and the Alaska Dept of Fish and Game were contacted in both Juneau and Anchorage. It was reported to the Coast Guard that no salmon were running at this time, no waterfowl were migrating, but shore birds might be foraging at the spring low tide exposed intertidal zones, and that there might possibly be bears along the shoreline. In addition NOAA provided MSO Juneau with tidal current and height curves as well as an ADIOS run which had the diesel naturally dissipating within a few days. Support was by phone and fax only and lasted for roughly 6 hours.

References:

1. John Palmes, ADFG, Juneau
2. Nevin Holmberg, USFWS, Juneau
3. Claudia Slater, ADFG, Anchorage
4. Evert Robinson-Wilson and Ron Britton, USFWS, Anchorage.
5. NWS Juneau

Name of Spill: C/V Star Princess

NOAA SSC: John W. Whitney

Date of Spill (mmddyy): 062395

Location of Spill: Poundstone Rock, Lynn Canal, 25 miles NW of Juneau

Latitude: 58,23.1,N

Longitude: 134,38,9,W

Oil Product: IFO-380

Oil Type:

Type 4 - Heavy Oils (heavy crude oils, No. 6 fuel oil, bunker c)

Quantity: less than 100 gallons

Source of Release: Non-Tank Vessel

Resources at Risk:

Shorelines are mostly exposed rocky; one sea lion haul-out near Poundstone Rock; several eagle nests along the shoreline

Other Special Interest:

None

Keywords:

IFO, littering, salvage

Incident Summary:

Enroute from Skagway to Juneau the 800 foot cruise vessel, M/V Star Princess, owned by Princess Cruises, Inc., grounded on Poundstone Rock, 25 miles NW of Juneau, in the early morning hours of June 23, 1995. The vessel had 2000 people on board along with 271,000 gallons of IFO-380. The grounded ripped several gashes in the hull breaching several fuel and non-fuel tanks. However, less than 100 gallons of fuel were lost at the grounding site, and the vessel made it 15 miles further south to Auke Bay with no further fuel release. In Auke Bay, the vessel dropped anchor and was surrounded with boom to catch additional release which never occurred. A sheen extended south of Poundstone Rock for a few miles, and there were conflicting reports whether or not it contained any recoverable oil. Brisk winds and choppy seas at the grounding site combined to rapidly disperse the oil slick, and no recovery was attempted. Meanwhile at Auke Bay the weather was calm with overcast skies. Most of the IFO fuel was littered from damaged tanks into undamaged tanks. After temporarily plugging the holes in the hull with wood plugs and epoxy, the vessel was allowed to sail south to Portland for repairs. Media interest throughout the incident was high.

Behavior of Oil:

A diesel sheen was reported and it is uncertain whether or not any IFO fuel escaped. Nevertheless the high energy state of the seas, dispersed and dissipated the "oilslicki" completely within 12 hours with no shoreline impacts.

Countermeasures and Mitigation:

As described in Incident Summary above

Other Special Interest Issues:

No effects to wildlife of habitats, but the tourism business to SE Alaska was dealt a serious blow as the remaining 10-12 voyages of the Star Princess into SE Alaska had to be cancelled.

NOAA Activities:

The NOAA SSC in Anchorage was notified early in the morning of June 23 at home by the NOAA Seattle office as the result of the initial report to the National Response Center. By the time MSO Juneau was contacted, the M/V Star Princess was at anchor in Auke Bay and the situation was fairly stable. Nevertheless, the resource agencies and the NWS were contacted to provide additional information. The ADFG reported that there were no particularly sensitive resources in Favorite Channel, where Poundstone Rock was located, and that Auke Bay was sensitive from a human-use rather than a biological point of view, at this time of year. NMFS and USFWS reported pretty much the same, and representatives from all three organizations made themselves available, if necessary, for further conciliation on-scene with the Coast Guard.

The next day, I was unavailable, and MSO Juneau contacted my backup, Ken Barton, for advice on the RP's request to move the vessel to Portland for repairs without first emptying out the fuel tanks which were open to the sea. The Coast Guard was informed that essentially that was an unthinkable proposition as there are too many variables, unknowns, and sensitivities in SE Alaska to allow the transit of a vessel south to Portland with fuel tanks open to the sea.

References:

1. John Palmes, ADFG, Juneau
2. Claudia Slater, ADFG, Anchorage
3. Deb Rudis, USFWS, Juneau.
4. Ron Britton, USFWS, Anchorage
5. Pam Bergman, DOI, Anchorage
6. Steve Zimmerman, NMFS, Juneau
7. NWS Juneau

Name of Spill: F/V Anna-K

NOAA SSC: John W. Whitney

Date of Spill (mmddyy): 081095

Location of Spill: One and one-half miles west of Kanagunut Island at the eastern end of Dixon Entrance and the southern extremity of SE Alaska

Latitude: 54,42.2,N

Longitude: 130,43.3,W

Oil Product: Diesel and Lube oil

Oil Type:

Type 2 - Light Oils (diesel, No. 2 fuel oil, light crudes)

Quantity: 2500 gallons of diesel, and 100 gals of lube oil

Source of Release: Non-Tank Vessel

Resources at Risk:

Habor seals and commercial fishing and tanner and king crab operations

Other Special Interest:

None

Keywords:

fishing boat, fire, diesel

Incident Summary:

The 90' F/V Anna-K was bound for Prince Rupert, British Columbia, when it issued a mayday because of a fire that broke out Wednesday night, August 9, in Dixon Entrance, 50 miles southeast of Ketchikan. The U.S. Coast Guard cutter Anacapa, along with a 41 foot tugboat and a Canadian Coast Guard vessel, responded to the fire. It was brought under control but began burning again while a Coast Guard firefighting crew was aboard inspecting the damage. The vessel suddenly sank Thursday morning in roughly 50 fathoms of water, about 12 hours after the fire started with approximately 2500 gallons of diesel and 150 gallons of lube oil. No salvage or pollution response was attempted. The vessel's four member crew was safely transferred to another vessel. Seas were calm at the time.

Behavior of Oil:

Light sheens were noted around the vessel as the diesel slowly escaped. Depending on the rate of release of the remaining fuel more of the same with rapid dispersion can be expected.

Countermeasures and Mitigation:

None

Other Special Interest Issues:

None

NOAA Activities:

This was an incident where the NOAA notification system had to cascade through several levels and really worked. The Alaskan SSC was in Prudhoe Bay participating in a spill drill and MSO Juneau was prompted to contact NOAA through the Seattle office. The hazmat duty officer received the call in Seattle on Thursday morning and within 30 to 45 minutes the Alaskan SSC was contacted and back in touch with MSO Juneau, who informed him that the vessel had just sunk. Prior to that, however, Seattle hazmat had requested a resource-at-risk assessment from RPI and had initiated a weather report. The incident terminated as rapidly as it had begun.

Involvement in response (on-scene, by phone and fax)

Support provided

Participation in committees and special projects

Unusual responsibilities

Meetings attended/recommendations made

Duration of NOAA support

References:

1. Jim Farr, NOAA Hazmat, Seattle.
2. Mark Miller, NOAA Hazmat, Seattle

Name of Spill: George Inlet Cannery

NOAA SSC: John W. Whitney

Date of Spill (mmddyy): 051097

Location of Spill: At the mouth of George Inlet, ten miles east of Ketchikan

Latitude: 55,22.5,N

Longitude: 131,28.3,W

Oil Product: Bunker C

Oil Type:

Type 4 - Heavy Oils (heavy crude oils, No. 6 fuel oil, bunker c)

Quantity: approximately 100 gallons

Source of Release: Facility

Resources at Risk:

Anadromous fish

Other Special Interest:

Consideration was given to using PES-51 to remove the heavy oil stains on the rocky shoreline. Being a rather small, isolated shoreline impact, it was thought that the use of PES-51 might produce some beneficial results and provide some needed experience in using this product. Unfortunately this effort never achieved critical organization inertia to be conducted.

Shoreline Types Impacted:

sloping bedrock shores, mostly exposed

Keywords:

PES-51

Incident Summary:

On May 10, 1997, a caretaker at the old abandoned George Inlet Cannery discovered that a storage tank that had fallen off its platform onto the beach was ruptured and spilling Bunker-C oil onto the beach and into the water. Approximately 100 gallons of oil was discharged creating a sheen approximately 2000 yards by 300 yards in George Inlet. Approximately 1200 feet of shoreline was impacted. The Cape Fox Native Corporation was the RP, and using sorbents attempted to remove as much oil as possible from the rocky, cobble, mostly sheer rock and hard shale shoreline. A log boom and a sorbent, sausage boom were deployed around the oiled beach area. The oil had been in the tank for so many years that it was very tarlike, was not spreading, and was like a creosoted piling, even after using sorbents on the oil. The oiled shoreline had very little bio-activity, some sea weed and barnacles. Consideration was given to using PES-51 on the oil by the Coast Guard, but this effort was never well enough organized to achieve fruition. In the end, nothing was done, nothing was apparently affected, and only a hard tar coating on the bottoms of some of the rocks could be found as evidence of anything ever happening.

Behavior of Oil:

The released Bunker-C was so old that it was practically inert. Minimal sheening resulted, and the most common description was that the oil on the rocks was like a coating on a creosoted piling. As a result the oil did not move out of its initial area of impact. Use of sorbents on this oil were only minimally effective.

Countermeasures and Mitigation:

Only sorbents were used for shoreline cleaning, and no open water recovery was necessary. The entire impacted area was boomed with log boom and sorbent boom.

Other Special Interest Issues:

possible use of PES-51

NOAA Activities:

The NOAA response to this incident outside of Ketchikan was entirely by phone and fax. Upon receiving word of the incident, MSO Juneau requested information on possible shoreline cleanup techniques. Water flush was suggested but never pursued due to the lack of equipment and, more importantly, the extreme tenacity and tarlike state of the oil coating on the rocks. Instead, the local spill coop, SEAPRO, was asked to evaluate the situation and suggested using PES-51, a chemical cleaner that might help to mobilize the oil from the substrate. Because this was a relatively small incident and a very localized area affected, NOAA concurred with this idea. Our major concern was being sure that the tarry oil, in fact, floated. In this instance, concurrence was necessary from the state of Alaska and EPA RRT reps along with consultation with DOI and DOC ARRT reps. In order to provide information on possible NOAA trustee resources affected, NOAA Hazmat in Anchorage contacted the NMFS Juneau office and learned that this small oiled area provided no immediate threats to sea lions or harbor seals, and this information was transmitted to the DOC ARRT rep. The Coast Guard application to the ARRT to use PES-51 was poorly organized and ultimately withdrawn, even though both the state and EPA supported its use for this very small area in order to gain more knowledge and familiar with its utility. Subsequently, NOAA Anchorage had several conversations with MSO Juneau discussing shoreline cleanup techniques and protocols, such that it was a learning experience for everyone.

References:

1. NWS, Anchorage
2. Jim Annicelli, SEAPRO, Ketchikan
3. Jeff Merrill, SEAPRO, Ketchikan
4. Alan Mearns, NOAA Hazmat, Seattle
5. Mark Miller, NOAA Hazmat, DOC rep on ARRT, Seattle
6. John Lewis, NMFS, Juneau
7. MSO Juneau and MSD Ketchikan

Name of Spill: Haines Dock Asphalt Spill

NOAA SSC: John W. Whitney

Date of Spill (mmddyy): 081897

Location of Spill: right off the main dock at Haines, Ak

Latitude: 59,15,N

Longitude: 135,25,W

Oil Product: Asphalt emulsion

Oil Type:

Type 4 - Heavy Oils (heavy crude oils, No. 6 fuel oil, bunker c)

Quantity: 1000 gallons

Source of Release: Barge

Resources at Risk:

kelp and unidentified shell community

Other Special Interest:

None

Shoreline Types Impacted:

Minor effect on gravel/pebble beach;

Keywords:

Asphalt, smothering, sinking oil

Incident Summary:

At the Haines, AK, dock a 2000 gallon tank of asphalt emulsion was being unloaded from a barge on the evening of August 18. An accident occurred in handling the tank, and approximately 1000 gallons of the material spilled into the water just off the dock face. It rapidly changed from the consistency of a light syrup to viscous blobs as it hit the water. Boom and sorbent pads were immediately deployed by the RP; however, the material would not adhere to sorbent pads and went beneath the booms and sank to the 30-35' sandy bottom. Some of the tarballs attached to kelp and floated away, and some tarballs came ashore. Divers were obtained from Ketchikan to investigate and clean up the material. On the bottom the material was so viscous that divers literally just scooped it up into nets and buckets. A total of roughly 800 lbs was recovered. MSO Juneau closely monitored the situation which went on for about a week. The release received considerable local press coverage often emphasizing its alleged negative impacts. In fact, spill's impact was minimal. Throughout the incident the weather was mild.

Behavior of Oil:

The asphalt emulsion rapidly changed from the consistency of a light syrup to viscous

blobs as it hit the water. Boom and sorbent pads were immediately deployed by the RP; however, the material would not adhere to sorbent pads and went beneath the booms and sank to the 30-35' sandy bottom. Some of the tarballs attached to kelp and floated away, and some tarballs came ashore. Of the 1000 gals spilled roughly 800 were recovered with remaining finely distributed over the bottom and unrecoverable.

Countermeasures and Mitigation:

Boom and sorbent pads were immediately deployed by the RP; however, the material would not adhere to sorbent pads and went beneath the booms and sank to the 30-35' sandy bottom. On the bottom the material was so viscous that divers literally just scooped it up into nets and buckets.

Other Special Interest Issues:

None

NOAA Activities:

The morning after the incident, NOAA was contacted by MSO Juneau and was asked to provide information concerning the fate and effects of asphalt emulsion and to provide cleanup suggestions. The product was determined to be a water in asphalt emulsion used as a road underlayment or as a sealer coating over old asphalt driveways, etc. Coast Guard was informed that it would form pancakes and blobs and collect in depressions on the bottom. With the cold water in SE Alaska, the material would probably be stiff and chunky, but that divers would have to make a first hand assessment of its condition on the bottom. If thick and heavy, the asphalt could be just scooped from the bottom; however, it may have to be pumped if it was less viscous. Because a fairly strong local press developed concerning the possible negative effects of the spill, the Coast Guard asked NOAA to provide a fact sheet regarding the fate, persistence, effects, and toxicity of this material. Such a sheet was prepared by LSU saying that the ultimate fate of the product would be a persistent asphalt pavement, and that any effects would occur through smothering of the benthic community, and the chemical toxicity of the asphalt was very low. Since most of asphalt was removed from the bottom which was mostly sandy, the negative effects of this spill are minimal.

References:

1. Jeff Dahlin, RPI, Columbia, SC
2. Jerry Galt, NOAA Hazmat, Seattle
3. Charlie Henry and Paulene Roberts, LSU, Baton Rouge

Name of Spill: F/V Samaqu

NOAA SSC: John W. Whitney

Date of Spill (mmddyy): 041698

Location of Spill: Chatham Strait, SE Alaska

Latitude: 57,44,N

Longitude: 134,47,W

Oil and Chemical Products: diesel ammonia

Oil Type:

Type 2 - Light Oils (diesel, No. 2 fuel oil, light crudes)

Quantities: 6500 gallons diesel
600 # ammonia

Source of Release: Fishing Vessel

Resources at Risk:

Possible native village as a result of ammonia release

Other Special Interest:

None

Shoreline Types Impacted:

None

Keywords:

diesel, ammonia, fire

Incident Summary:

Two men escaped injury Thursday, April 16, when their fishing vessel caught fire in Chatham Strait off the coast of Southeast Alaska. The owner and crew of the 105 foot fishing vessel, Samaqu escaped in a life raft and were picked up by the Coast Guard. The fire started shortly after noon probably initiated after diesel fuel spilled on an electric heater and ignited. Flames shot 60 to 80 feet in the air, and the Samaqu burned through the night. Because there were 600 pounds of ammonia on board and Coast Guard Marine Safety crews did not have the right equipment to safely extinguish the fire, it was allowed to burn. Ultimately the vessel sank in 1680 feet of water, the next day, leaving only minor sheen and some minor debris floating behind. The CGC Anacapa was on-scene. The CG district 17 DRAT overflowed the vessel with a HH-60 using an IR camera. Weather throughout the incident was showers with SE winds at 15 to 30 knots.

Behavior of Oil:

Diesel release formed only a small sheen which was never larger than approximately 14 mile by 10 yards. The sheen rapidly dispersed in the wind. It is not known whether or not the ammonia was ever released.

Countermeasures and Mitigation:

No countermeasures were employed. The vessel fire presumably consumed most of the diesel and possibly the ammonia.

Other Special Interest Issues:

None

NOAA Activities:

The NOAA SSC for Alaska was contacted on noon, April 17, by MSO Juneau regarding the incident. The major concern that they wanted addressed was from the native village of Angoon which was concerned the effects of ammonia in the water on their subsistence seaweed gathering sites and in the air on their human population. Noting that the accident and fire were roughly 15 miles north of the village of Angoon and their seaweed gathering locals, and that the wind was out of the SE at 15-30 knots, the NOAA SSC contacted Marlene Zuboff, the executive officer of the Angoon Community Association. It was explained that any release of ammonia in the air would drift away from their village. Similarly, there was no threat to their seaweed subsistence harvest areas. Nir Barnea of NOAA Hazmat in Seattle was contacted to further discuss the ammonia threat situation.

References:

1. Nir Barnea, NOAA Hazmat Industrial Hygienist, Seattle

Name of Spill: M/V Wilderness Adventurer

NOAA SSC: John Whitney and Ken Barton

Date of Spill (mmddyy): 061299

Location of Spill: Head of Dundas Bay, Glacier Bay National Park, SE Alaska

Latitude: 58,26,N

Longitude: 136,30,W

Oil Product: diesel and engine room slops

Oil Type: Type 2 - Light Oils (diesel, No. 2 fuel oil, light crudes)

Quantity: 4200 gals diesel, minor lube oil

Source of Release: Non-Tank Vessel

Resources at Risk:

Lots of birds, infauna on tidal flats, number of eagles in area, and some sea otters

Other Special Interest:

Occurred in a National Park

Shoreline Types Impacted:

None, but potentially marshes and sheltered tidal flats

Keywords:

National Park

Incident Summary:

The 156' M/V Wilderness Adventurer struck rocks, cracked its hull and began taking on water at 1425, Saturday, June 12, in Dundas Bay, Glacier Bay National Park. The 56 passengers and 24 crew members were evacuated safely with no one injured. As the tide subsided, the vessel was hard aground with a 40 degree list to port and down enough at the stern allowing water to wash through the engine room. The vessel was judged to be in a perilous situation, being extremely unstable at low tide and unsafe for boarding. The main fuel tank containing 4200 gallons of diesel was not compromised. However, small amounts of lube oil and diesel from the engine room escaped from the vessel. At the time of the grounding, winds were 15 knots from the SSE with unrestricted visibility. Once notified the Coast Guard responded with a double boom around the vessel and pumps to aid in dewatering as a result of a 3 foot tear in the hull and water washing in over the stern at low tide. An incident command post was established at the MSO Juneau office with the environmental unit being in Gustavus and consisting of national park personnel. Several vessels went on scene including tugs, response boats and salvage vessels. The objective was to refloat or gently pull the grounded vessel off the rock at the high tide while simultaneously using the pumps to dewater the vessel to the greatest extent possible. This plan was carried out on the afternoon of July 16, and the Wilderness Adventurer was successfully refloated with no additional loss of oil. After stabilizing the vessel and placing temporary patches on the three foot crack, it was taken to Hoonah and then will transit to Ketchikan for permanent repairs. In the end, an estimated 20 gallons of lube oil and diesel from the day tank were lost, and produced some sheening in

northern Dundas Bay. Also all the streams at the head of the bay were boomed prior to attempting the refloat.

Behavior of Oil:

Only a small oil sheen appeared on the water.

Countermeasures and Mitigation:

The vessel was doubly boomed to collect any oil should it be released. Skimmers were on scene should they be needed, and precautionary protective booming of sensitive areas was carried out.

Other Special Interest Issues:

None

NOAA Activities:

NOAA provided considerable support for this incident via phone and fax, but was not asked to come on-scene. The first request from the CG was to provide weather support, which was done in conjunction with the NWS office in Juneau. In addition, NOAA was requested to provide some worst case trajectory scenarios should the refloat fail and result in a large release of diesel. They were informed that the diesel slick would rapidly spread out down wind, produce a toxic pulse in the immediate waters possible resulting in some mortality, but would naturally disperse to nontoxic levels in several hours. Weather support was continued for two days after the vessel was refloated and while it was in transit to Hoonah.

References:

1. NWS Juneau office
2. Glen Watabayashi, NOAA Hazmat MASS group, Seattle
3. Rich Perkins, Glacier Bay National Park biologist, Gustavus

Potential Oil Spill Report Format

Name of Spill: F/V Su-Ce K

NOAA SSC: John W. Whitney

Date of Incident (mmddyy): 070199

Location of Incident: Sitka Sound

Latitude: 56,59,N

Longitude: 134,35,W

Oil Product: Diesel

Oil Type:

Type 2 - Light Oils (diesel, No. 2 fuel oil, light crudes)

Gallons: 800 gallons

Source of Spill: Non-Tank Vessel

General Description:

On the afternoon of July 1, the Coast Guard Juneau Communications Center and MSO Juneau received a call from the F/V Su-Ce K reporting themselves on fire with the P/C Destiny on scene assisting. After putting the fire out, the crew attempted to restart the vessel. The fire reflash and engulfed the vessel. The 2-men crew immediately abandoned ship onto the P/C Destiny. Later that day, the F/V Su-Ce K sank in approximately 50 fathoms of water with no signs of pollution. Prior to the sinking, MSO Juneau had contacted NOAA with a request for the worst case scenario trajectory, fate and effects for a planned scuttling of the vessel at 56° 45' N, 135° 49' W. This location was a good 15 miles from any landfall, and NOAA related to the Coast Guard the following information. For strong winds greater than 15-20 knots an instantaneous release of 800 gallons would spread downwind one half to 3/4 mile and dissipate in 3-5 hours. Whereas for a weak wind less than 15 knots, the plume would extend 1/4 to 1/3 miles downwind and dissipate in 4-6 hours. While this conversation was occurring, the Coast Guard received word that the vessel had sunk in Sitka Sound after a fire in the engine room.

Potential Spill Report

Name of Spill: M/V Spirit of 98

NOAA SSC: John W. Whitney

Date of Incident (mmddyy): 072799

Location of Incident: Tracey Arm in SE Alaska

Latitude: 57,33,N

Longitude: 133,11,W

Oil Product: Diesel and lube oil

Oil Type:

Type 2 - Light Oils (diesel, No. 2 fuel oil, light crudes)

Gallons: 9400 gallons diesel, 1000 gallons lube oil

Source of Potential Spill: Non-Tank Vessel (cruise ship)

General Description:

The Coast Guard MSO Juneau office reported that at 0900 on July 27, 1999, the 192' cruise ship, M/V Spirit of 98, had hit a rock in the eastern end of Tracy Arm in SE Alaska resulting in a hole into the engine room. No fuel tanks were punctured and no release of fuel occurred. Nevertheless, the vessel was in jeopardy of sinking due to water flooding in the engine room. The eastern 5-6 miles of Tracy Arm are vertical cliffs with no beach to intentionally ground the vessel to keep it from sinking. The captain was able to motor the vessel far enough back to west to intentionally ground the vessel at rough 57°53'N, 133°22'W, about 6-7 miles from its collision point. Meanwhile the Coast Guard responded with air lift pumps and crew to stem the incoming water. The CGC Anacapa was on scene and constructed a coffer dam around the leak for a concrete patch. With the engine room dewatered, the M/V Spirit of 98 was towed to Ketchikan for repairs.

NOAA Hazmat was asked to provide trajectories, both an instantaneous and a slow continuous one; weather information and forecasts, tidal data, and a synthesis of resources at risk. As a result NOAA indicated that diesel, being a refined product, would largely evaporate and disperse in the first 24 hours and not tend to form persistent slicks. Further, due to the relatively high concentration of light aromatic compounds in diesel, it tends to be more soluble and more toxic than heavier oils. If released the diesel would spread rapidly into thin sheens and would be expected to spread along the Arm for a mile or so from the vessel impacting the downwind shoreline. The incident occurred during a zero ceiling with rain, and the CG was informed that showers and mist would continue and that the ceiling and visibility would improve somewhat. After consulting with all the resource agencies, it was related to the CG the harbor seals are the main resources at risk in Tracy Arm, but that they tend to concentrate at its mouth and head. Also several anadromous streams flow into Tracy Arm, and at this time of year the number of birds in Tracy Arm is minimal. And there are no sea otters.

Potential Spill Report Format

Name of Spill: M/V Pacsun

NOAA SSC: John W. Whitney

Date of Incident (mmddyy): 022600

Location of Incident: Icy Bay, Northern Gulf of Alaska

Latitude: 59,56,N

Longitude: 141,26,W

Oil Product: IFO-380

Oil Type:

Type 4 - Heavy Oils (heavy crude oils, No. 6 fuel oil, bunker c)

Barrels: ~5000 bbls

Source of Spill: Non-Tank Vessel

General Description:

On the morning of February 26, 00, the 539' log freighter, Pacsun, went aground after having loaded logs from a camp in Icy Bay. The M/V Pacsun is operated by Lasoc Shipping Co. of Portland, OR. Originally it was believed that the vessel was on soft bottom just inside a spit extending from the eastern entrance to Icy Bay. However, divers discovered that the ship's aft portion was resting on a flat rock. After removing much of the log cargo, the initial attempt to refloat the vessel occurred on the lower high tide, the evening of Feb. 26 using the two small tugs that were available at the logging camp. This effort was unsuccessful. Two larger tugs had been dispatched from Juneau and were due to arrive on scene the morning of Feb. 27. Due to crew fatigue and the two larger tugs not being in position, no attempt was made on the morning higher high tide on Feb. 27. As a result, efforts to refloat the vessel became centered around the morning higher high tide on Feb. 28. With the vessel fully lightered of logs and the tugs pulling, the Pacsun was successfully refloated on this tide. No pollution occurred. NOAA supported the Coast Guard with weather and trajectory information. The NWS report for the evening of Feb. 26 indicated 15-20 kt surface winds from the east; however, on scene reports from the vessel reported 20 knot winds from the NE, indicating that drainage winds were coming out of Icy Bay from the north. As a result the following trajectory was related to the CG. Movement of any released oil will depend primarily on the relative strength of the drainage winds from the north and the surface winds predicted to come out of the SE at 20-25 kts. If surface winds dominate, then the west side of Icy Bay will be oiled; if the drainage winds dominate, then the oil will move along the GOA coastline, coming ashore periodically, and ultimately end up being grounded on the east side of Kayak Island. Tidal currents in Icy Bay will result in only a 1-2 mile tidal excursion. As a result of this trajectory forecast, the CG was requested to have the vessel monitor and report winds on the hour so that if a release does occur, NOAA will be in a better position to predict oil movement.

Name of Spill: New Port Walter

NOAA SSC: John W. Whitney

Date of Spill (mmddyy): 111800

Location of Spill: North side of Port Walter, SE side of Baranof Island, SE Alaska

Latitude: 56,25,N

Longitude: 134,40,W

Oil Product: Residual heavy oil

Oil Type:

Type 4 - Heavy Oils (heavy crude oils, No. 6 fuel oil, bunker c)

Quantity: about 600 gallons

Source of Release: Old abandoned onshore tank Facility

Resources at Risk:

Salmon studies at a NMFS Research station in Little Port Walter on the south side of Port Walter

Other Special Interest:

None

Shoreline Types Impacted:

Sheltered rocky shoreline fronted by a gravel beach

Keywords:

National Marine Fisheries Laboratory

Incident Summary:

On Saturday morning, Nov. 18, the resident laboratory mechanic at the NMFS Little Port Walter (LPW) Research Station reported that an oil spill originated from somewhere in the Big Port Walter Fiord. Further investigation revealed the spill had originated from an old unknown storage tank hidden back in heavy underbrush along a steep shoreline at a long abandoned herring reduction plant site at New Port Walter cove. There is little evidence of this plant remaining on sight today and the plant apparently last operated in the early 1930's. Due to current patterns and tidal action there was a real threat of potential damage to ongoing experiments involving fish in net pens plus other ongoing research studies at LPW station. Initially NMFS personnel deployed their limited stock of absorbent boom. The Coast Guard was notified and determined that the old plant was under U.S. Forest Service control, and hence they were the responsible party.

The initial actions of the Coast Guard were to provide boom to seal off the area around the source and keep the oil from spreading and to provide additional boom to help block off any possible movement oil into the LPW Research Station. It was estimated that only about 600 gallons were released when a seam in the tank gave way, and that about 150 gallons of oil

remained below the split seam with no further oil leaking out. Sensitive wildlife habitat existed westward at the head of Port Walter fiord.

The Forest Service contracted clean up crews, but high winds and difficult weather held them away from the spill for 4-5 days. Once on site, the heavy, pooled oil was manually removed, leaving only a small stain on the shoreline near the source. The response went on for a couple of weeks due primarily to the vagaries of the weather and the difficulties in landing a crew in the area.

Behavior of Oil:

Even though the oil was a heavy residual oil, a definite sheen occurred when it hit the water. This sheen was the first indication to the LPW Research Station that a spill had occurred. When the sheen dissipated, a heavy, tarry, sticky oil was left clinging to the shoreline rocks and overhanging tree branches. No oil actually moved into the LPW Research Station nor into the sensitive western portion of Port Walter Fiord. Only the immediate area around the tank source was impacted.

Countermeasures and Mitigation:

Hard boom and absorbent boom were used to contain the oil immediately around the source and to protect sensitive resources. The oil and oily debris was removed using manual recovery techniques.

Other Special Interest Issues:

None

NOAA Activities:

The original notification to NOAA was to our Seattle NOAA Hazmat office via NMFS officials involved with the LPW Research Station. The NOAA SSC was notified of the incident on Nov. 20 from the Seattle Hazmat office, and immediately MSO Juneau was contacted to confirm the information. The spill was confirmed, and thereafter, NOAA provided weather and tidal information to the Coast Guard. Since weather can be very bad in this portion of SE Alaska during this time of the year, special weather assistance was requested from NWS office in Juneau. They provided a special weather forecast for the Port Walter area, and this information, according to prearranged procedures, was post posted on the NOAA First Class email system after which it was forwarded to all involved parties - the State of Alaska ADEC, the U.S. Forest Service, the Coast Guard, and to resource agencies. This special weather support lasted for two weeks and was crucial in making travel decision as the quite often the weather was pretty snotty.

One advantage that NOAA Hazmat had in dealing with this situation was that one of our NOAA corpsmen, Ken Barton, had recently completed a sea assignment as captain of a SE Alaska hydrographic vessel and knew the Port Walter vicinity quite well. He also was familiar with the LPW Research station and its personnel as well as personnel from the U.S. Forest Service in SE Alaska.

NOAA was specifically requested for two different information pieces. Since the small amount of spilled oil was a heavy residual oil product, the Coast Guard requested information on appropriate clean up techniques and criteria for how clean is clean. After internal consultation, the following information was provided to the CG.

"The shoreline type in the New Port Walter embayment is a gravel beach, with a sheltered rocky shore along the outer sections. We would guess that both shoreline types could have some oil on them. This is a protected embayment with not much exposure to wave action for the east facing shore, where the tank is. Winds funneled from the west could create enough wave energy to remobilize the sediments on the west-facing shore at times. However, natural

removal rates will be episodic.

The recommended cleanup technique for this shoreline is manual removal - shovels, rakes, trowels, bags, etc. Remove all thick oil deposits; residues left behind should only be a coat or staining that does not produce sheens. Look carefully in the gravel beach sections to make sure that oil is removed that has penetrated the sediments at the high-tide area. With such small amounts of oil, it is more probably that the oil has coated the sediments and rocky shores. The sooner the oil is removed, the more effective manual removal will be. You may want to use sorbent pads to wipe any bands of oil from the rocky areas. Again, the highest priority is to remove any pooled oil, before it gets remobilized."

The second information request came from the State of Alaska ADEC a week and one half after the spill after they had reports of oil reaching as far south as the small town of Port Alexander, 12 miles south of Port Walter. After consultation with NOAA Seattle, it was confirmed that southward movement of the oil once it got out of Port Walter was most likely towards the south, and that as a result, this direction as well as one tidal excursion distance to the north would be the most likely trajectory of any oil coming out into Chatham Strait.

No NOAA on-scene presence was requested by the CG, and yet NOAA was quite effective in supporting the response, which went on for two weeks, via telephone, fax, and email. Throughout the response all the information was generally funneled through MSO Juneau.

References:

1. Aimee Devaris, NWS Juneau
2. Greg Matson, NWS Anchorage
3. Jacqui Michel, RPI and NOAA contractor, Columbia, SC
4. Glen Watabayashi, NOAA Hazmat, Seattle
5. Ken Barton, NOAA Hazmat, Seattle
6. Les Leatherberry, ADEC, Juneau
7. Nir Barnea, NOAA Hazmat, Seattle
8. Stanley Rice, NMFS, Auke Bay Labs
9. Bill Heard, USFS, Juneau